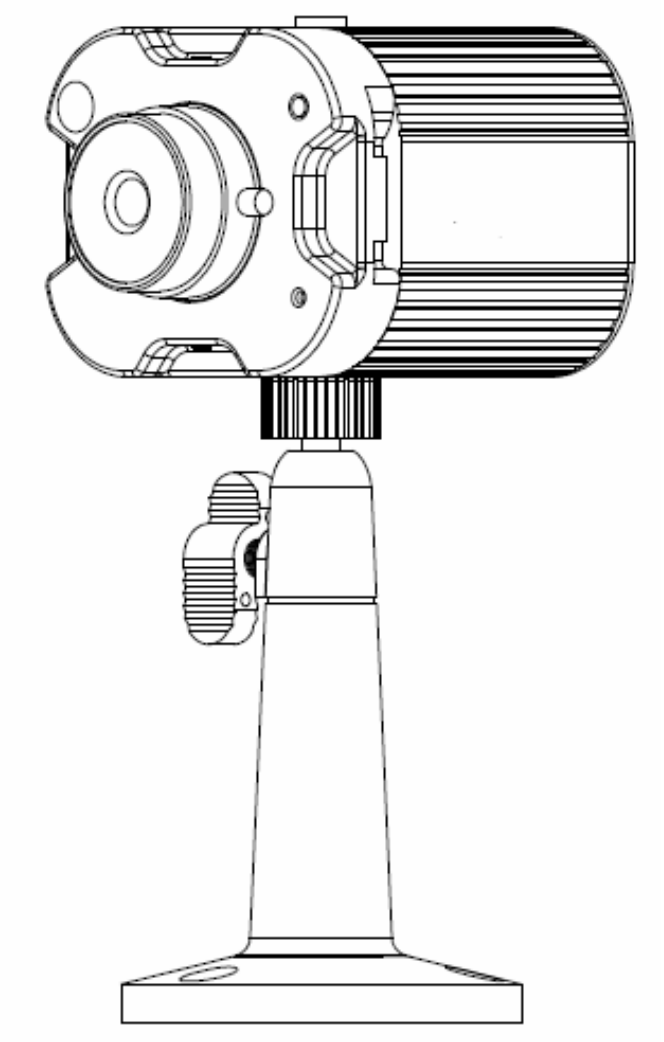

Fixed Network Camera

User’s Manual

201305.750. A1

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Important Notices

– Read Before Use

This instruction manual is intended for administrators and users of the IP Camera, including instructions for using and managing the camera on your network. The use of video surveillance devices can be prohibited by laws that vary from country to country. It is the user's responsibility to ensure that the operation of such devices is legal before installing this unit for surveillance purposes.

Heed all warnings
Before installing the IP Camera, please read and follow all the safety and operating instructions to avoid any damages caused by faulty assembly and installation. The user must adhere to all the warnings on the product and in this manual.

Liability
Every reasonable care has been taken in the preparation of this instruction manual. We cannot be held responsible for any technical or typographical errors and reserves the right to make alterations to the product and manuals without prior notice. We make no warranty of any kind with regard to the material contained within this manual, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. The user should verify the relevant information is current and complete before placing orders. All products are sold subject to our terms and conditions of sale at the time of order acknowledgement.

We shall not be liable nor responsible for the applications and resale of its products or bundled software with statements different from or beyond the specification/parameters stated by us. We are under no obligation to provide any further technical support service or product/software alteration beyond our representation.

Trademarks
All names used in this manual and products are probably registered trademarks of respective companies.

CE/FCC Statement (EMC)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. If the equipment is not installed and used in accordance with the instruction, it generates, uses, and can radiate radio frequency energy which may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his/her own expense will be required to take whatever measures may be required to correct the interference.

Overview

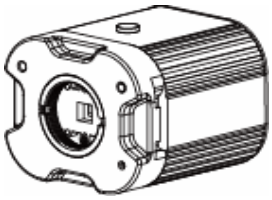
The Camera is a compact size box type camera with full function integrated that will be definitely beyond user's expectations. We present high quality image and video footage of WXGA High Definition resolution in a Super-mini IP camera!

The Focus Assist Button allows users to adjust the camera focus efficiently with precision by a simple click! The cable management design does a neat job for cabling. Equipped with Removable IR-cut filter (ICR) for Day & Night visions, The Camera can be applied in multiple environments.

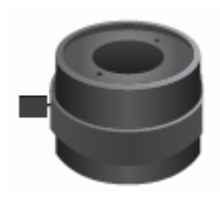
The Camera comes with triple power sources (PoE, DC12V, AC 24V) as redundant power supply in case of power failure. The full-functioned design with micro-SD card slot, two-way audio, terminal I/O, BNC output makes it a cost-effective option and ideal for small project/business application.

Package Contents

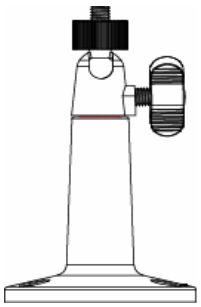
Camera



Fixed Lens



Camera Stand



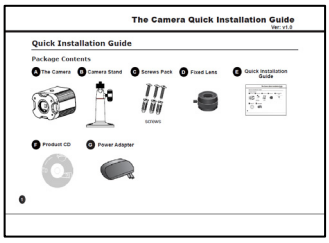
Product CD

Hardware Pack

Screws

Power Adapter

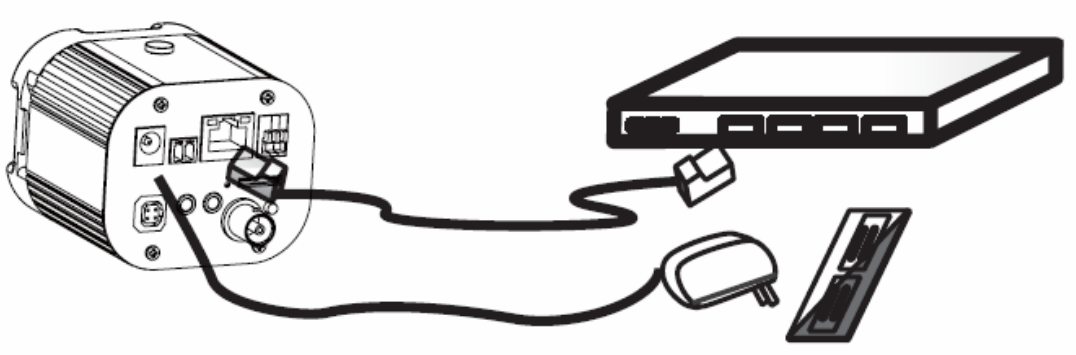
Quick Start Guide



Installation

Hardware Installation

1. Define the type of network device.
2. If the network device supports PoE (Power over Ethernet) function, simply connect the camera to it via an Ethernet cable.
3. If not, the connections to the network device (via Ethernet cable), and AC 24V or DC 12V adapter are required.

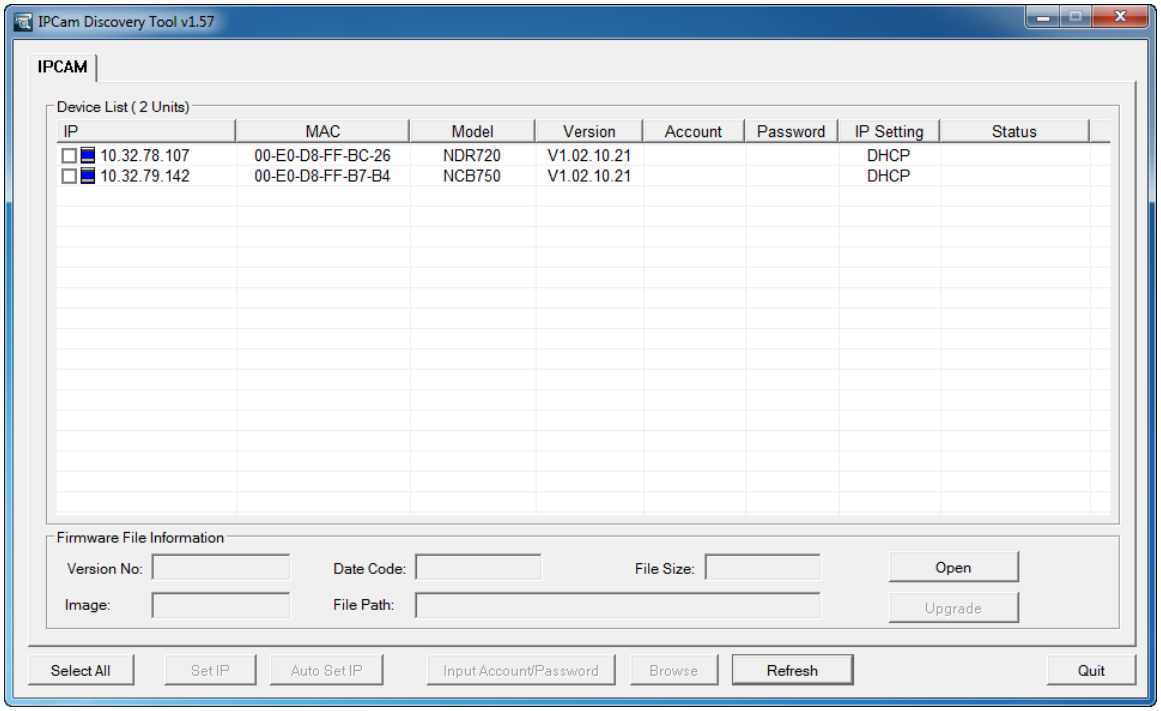


Software Installation

Discover IP Cameras

IPCAM Discovery Tool is a utility provided for not only searching and displaying the available IP cameras information in a network but also managing the multiple networking settings such as static IP address assignment.

After completing the hardware installation, run IPCAMDiscovery.exe to search for the IP camera installed.



Assigning IP Address to the device

The steps of applying this search tool are described as below.

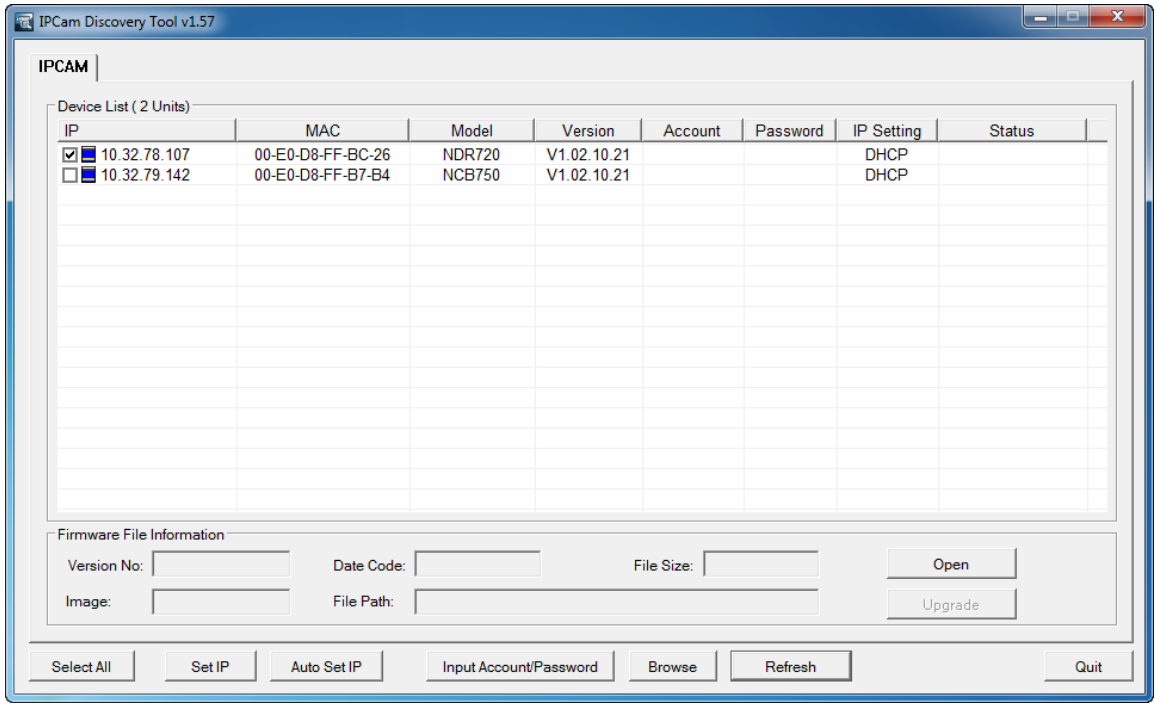
1. **Launch Discovery Tool (IPCAMDiscovery.exe)**
2. **Assign IP address**

   The selection is based on a single or multiple camera devices.

   [Set IP]

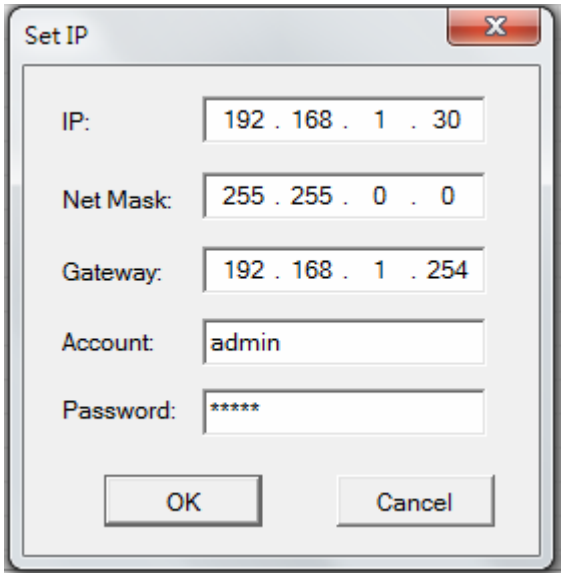
   This is applied to one specific camera selected from the Device List.

   Step1: Select one specific camera device



   Step2: Input desired IP information

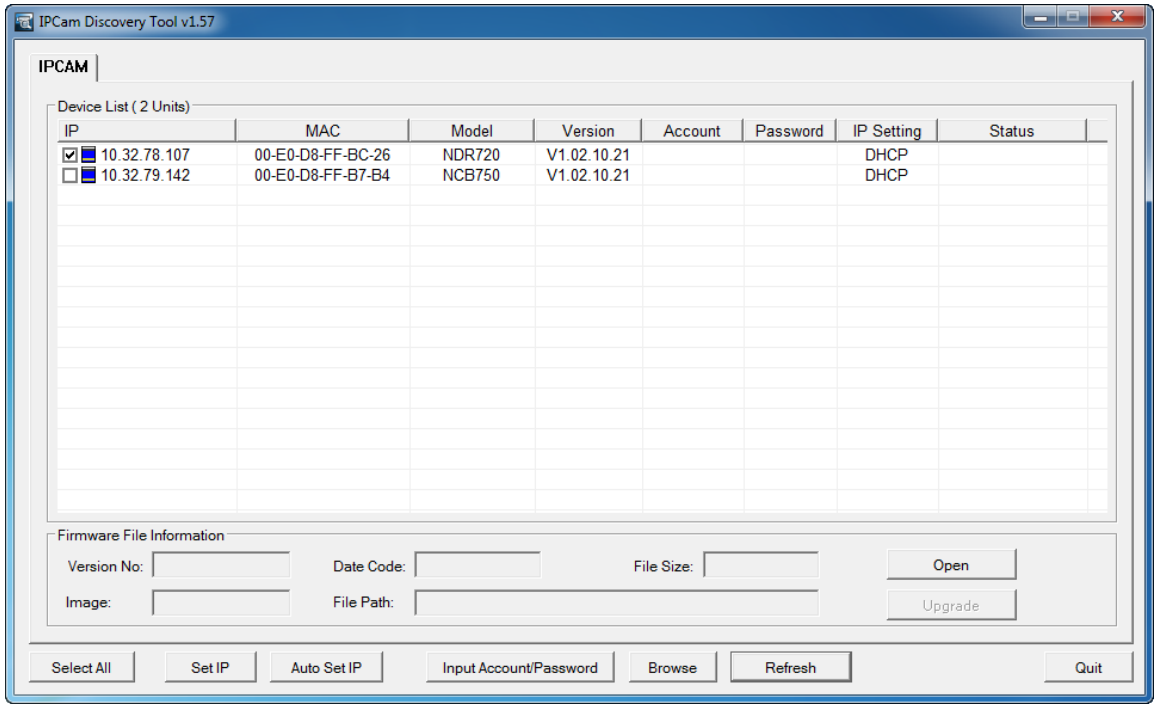
   The default settings of account /password are admin / 1234. If that were been changed, please enter the set values.



[Auto Set IP]

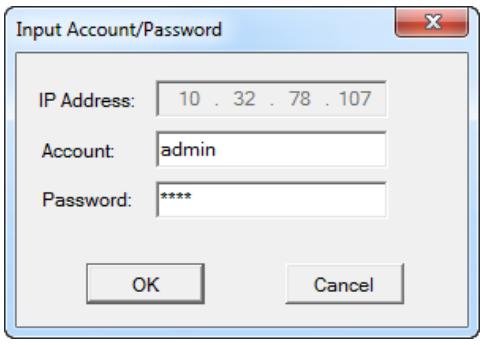
This is applied to a group of specific cameras selected from the Device List.

Step1: Select specific cameras

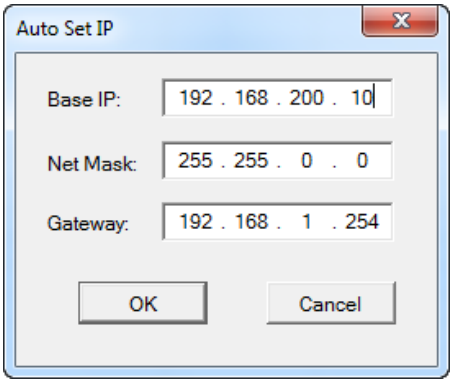


Step 2: Input Account / Password

The default settings of account /password are admin / 1234. If that were been changed, please enter the set values.

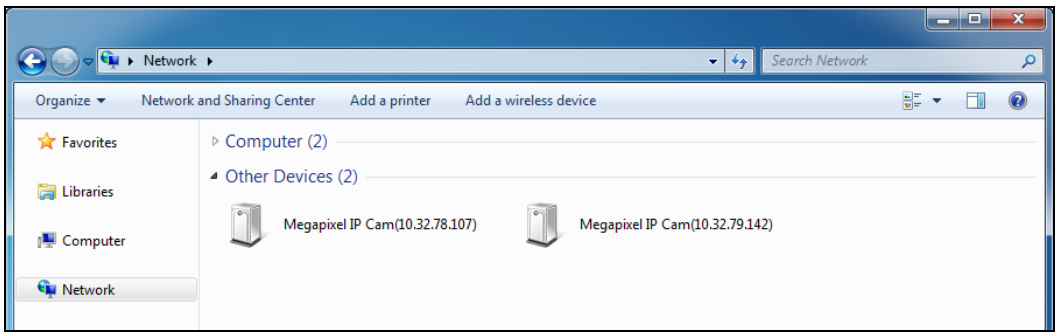


Step 3: Input IP information



Discovering devices in Windows Network

If the IP camera is installed in a network with DHCP and UPnP services, after obtaining an IP address from DHCP server, it can then be discovered in "Windows Network" of a client PC, see figure below. The reason for being automatically discovered is that the IP camera's UPnP is default enabled (see ***Network → Network Connectivity***).



NOTE

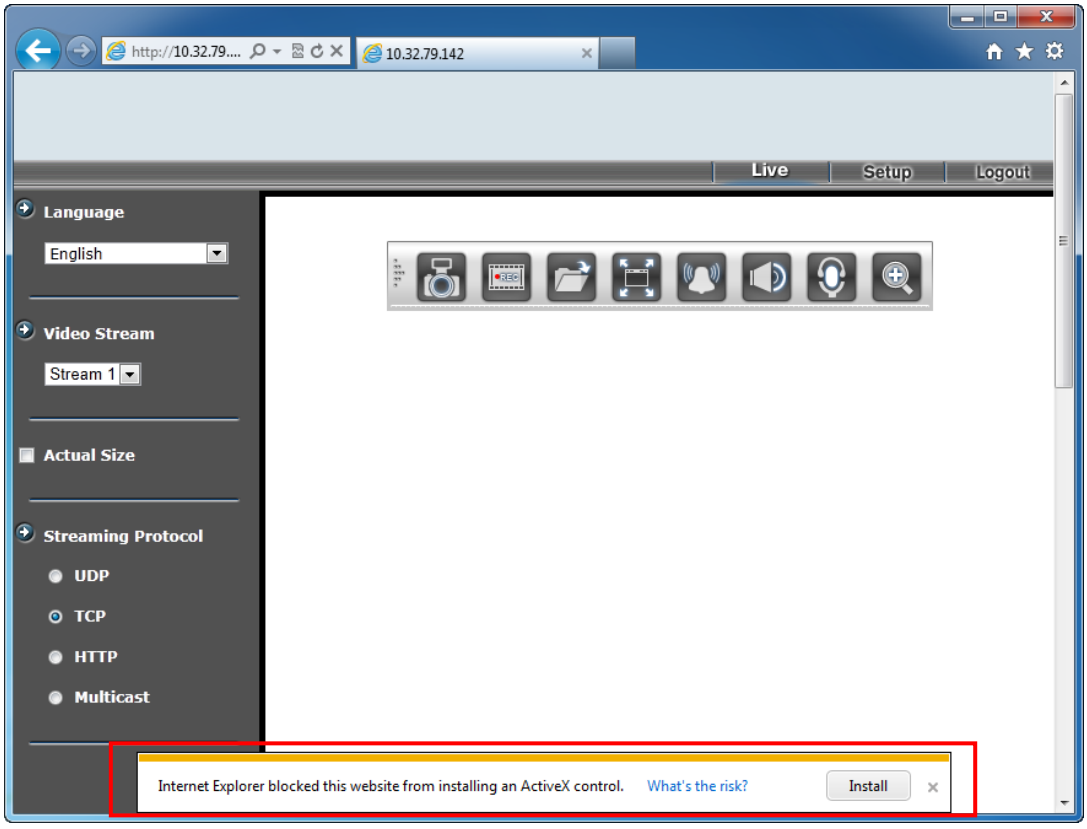
The term "**Windows Network**" in given figure above is used in Windows Vista / 7. It can be referred to Windows XP "**My Network Places**" which possesses the same capability of discovering UPnP devices.

Right-click on the device and select "Properties", the pop-up window shows all the information related to the device, including the **web access info**. Use the web address to connect to the IP camera. Or simply double-click on the selected device, which gets immediately access to the camera webpage.

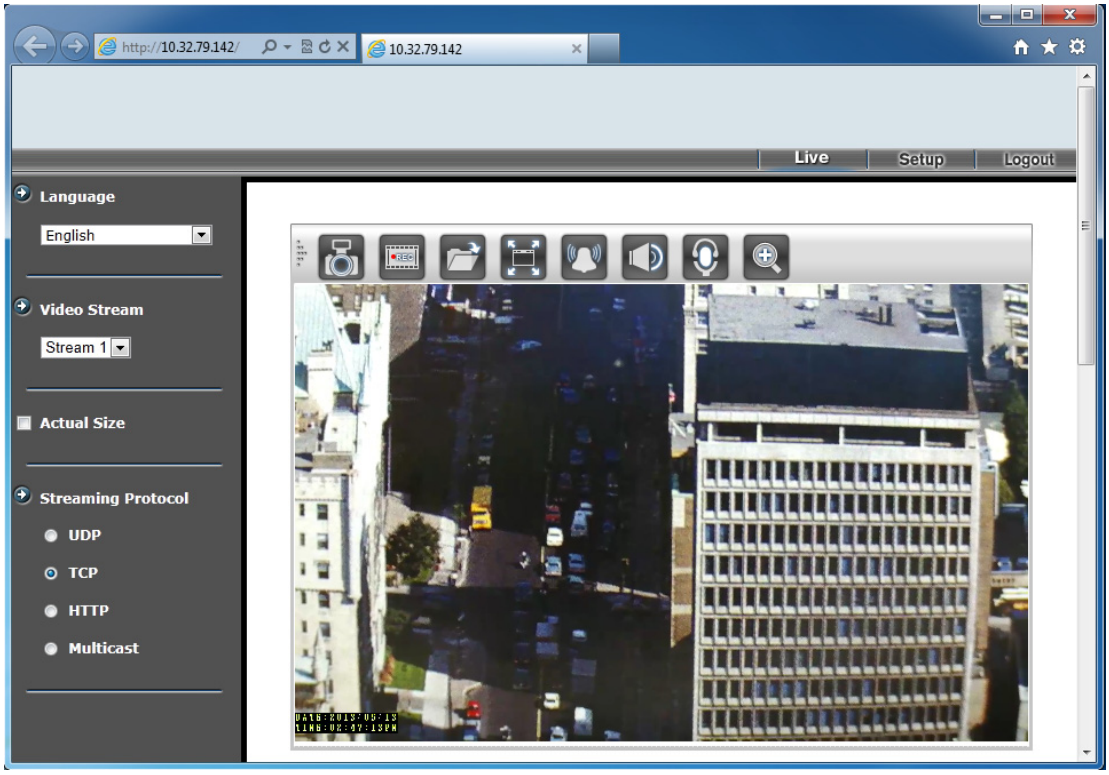
To identify the camera from the listed devices in "Network", utilize the UPnP name and the device's MAC address. This MAC address can be found on the label.

ActiveX add-on Installation

It is recommended to use Internet Explorer 8 or later as the primary browser to access the IP cameras website. The first-time access to the camera webpage will be prompted to install the ActiveX. To allow the installation, click **"Install"** on the message bar and follow the instructions to complete ActiveX installation.



When the installation is completed, IE browser can display the live video of the IP camera as the below figure.



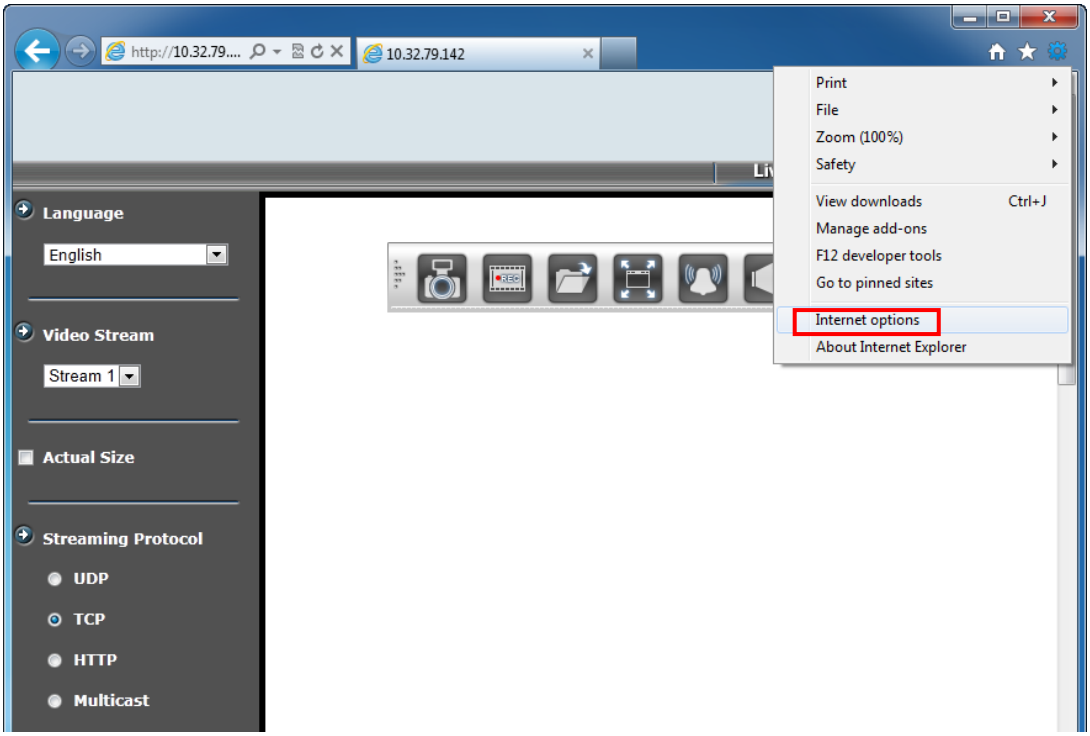
NOTE

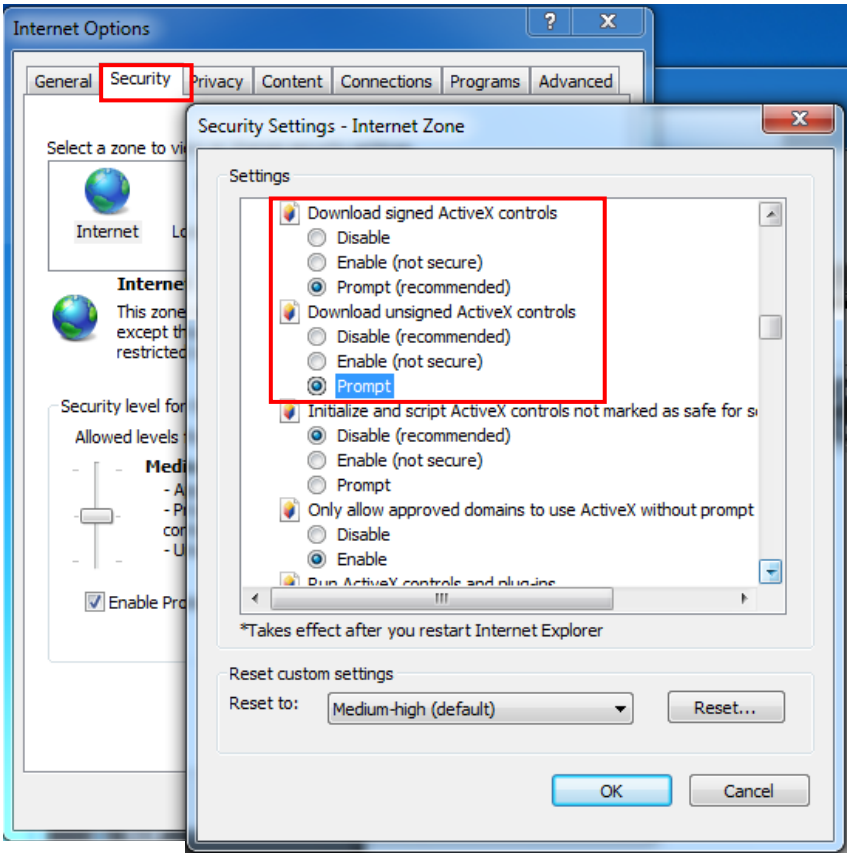
If, however, there is not any prompted message or ActiveX can not be installed at all, it is needed to change the IE security level and settings.

<Example>

Internet Explorer 9: Internet options → Security → Custom level…

Ensure the "Download signed ActiveX controls" setting is either "**Enable"** or "**Prompt"** selected and "Download unsigned ActiveX controls" setting is either "**Enable"** or "**Prompt"** selected, too.



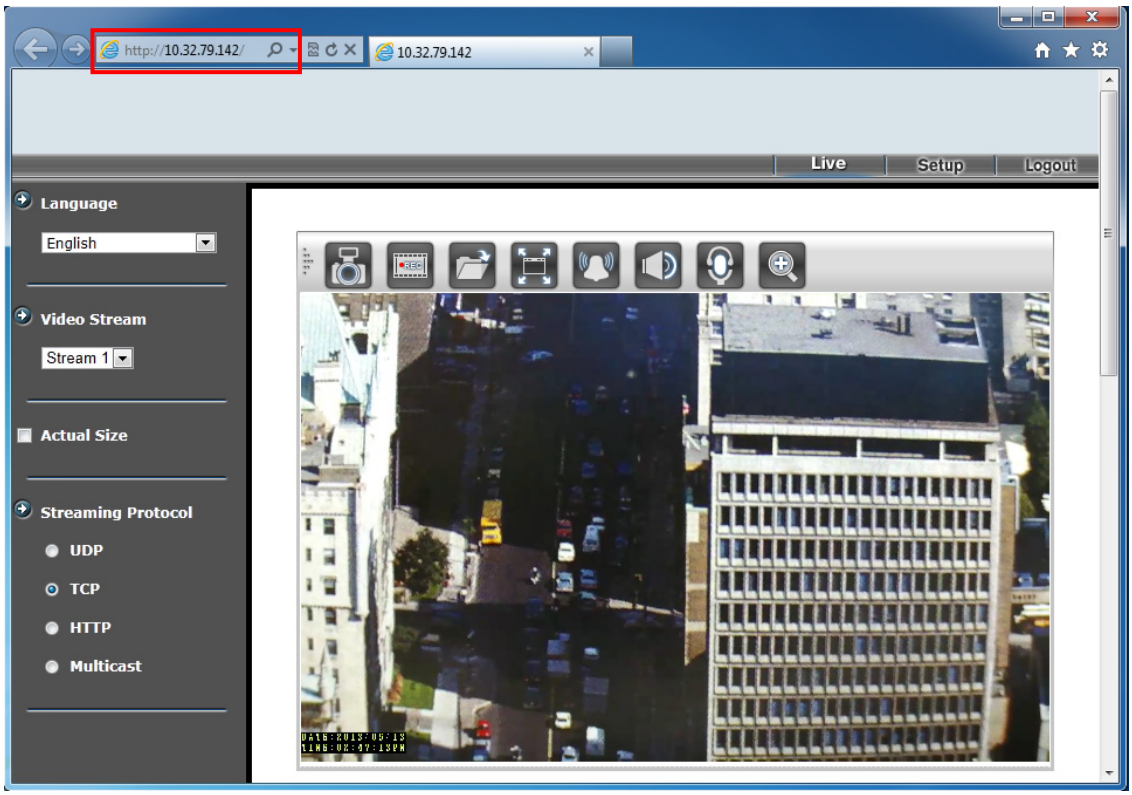


Accessing the camera

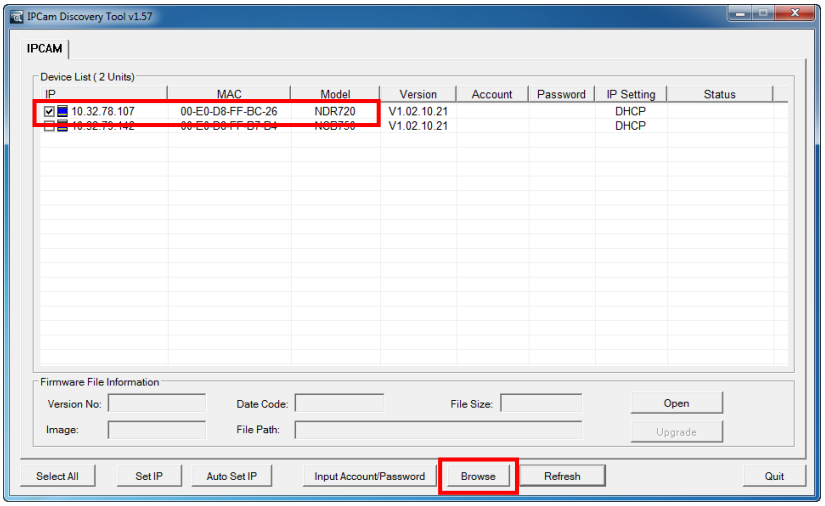
Viewing the live video

With the correct installation and IP settings, the camera device can be approached via network. There are three ways to view the live video from the camera: Internet Explorer, RTSP players, and NVR / CMS software.

1. **Internet Explorer**
   - Launch IE browser and input the IP address of the camera or,
   - Click on “Browse” button on the selected IP camera address from IPCAM Discovery Tool



OR



NOTE

IP cameras also support the other web browsers for viewing the live video such as Firefox, Google Chrome or Safari. The default settings of account /password are admin / 1234.

2. RTSP Player

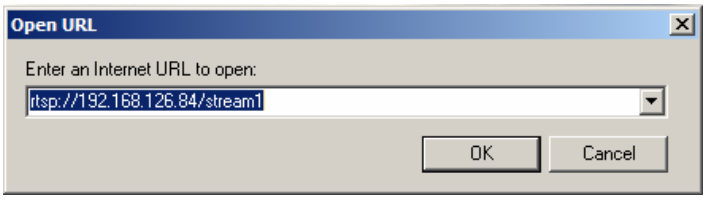
The live video of the camera can be played with RTSP players, such as VLC or QuickTime.

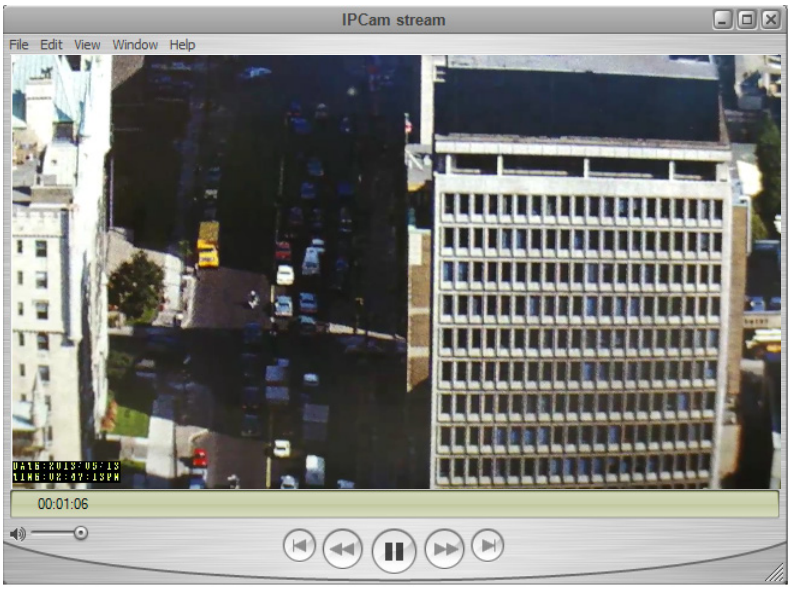
The camera supports two simultaneous video streaming (see ***Video & Audio → Video Setting***). To gain access to the camera for each video stream, the **RTSP URL** will be required. The default paths for the 2 streams are “stream1” and “stream2”. The URL format should be input as below.

Stream1: rtsp://Camera_IP/stream1

Stream2: rtsp://Camera_IP/stream2

The example given below is the live video displayed with QuickTime player.

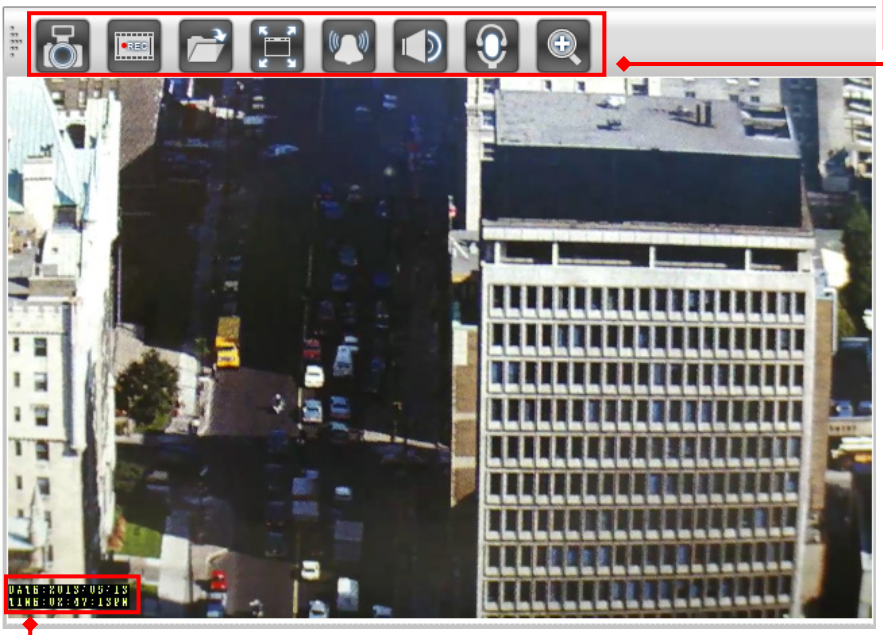

Open URL
Enter an Internet URL to open:
rtsp://192.168.126.84/stream1
OK
Cancel


IPCam stream
File Edit View Window Help
00:01:06

The Live view page

The following illustration shows you the front page of IP camera website.

Live Video Window



Snapshot: Press the button to capture an image photo

Record: Press the button to start recording. Press again to stop it.

Set Path: set up a file path that video clips and snapshots can be stored.

Full Screen: Press the button to enter the full screen mode. Press ESC key to return.

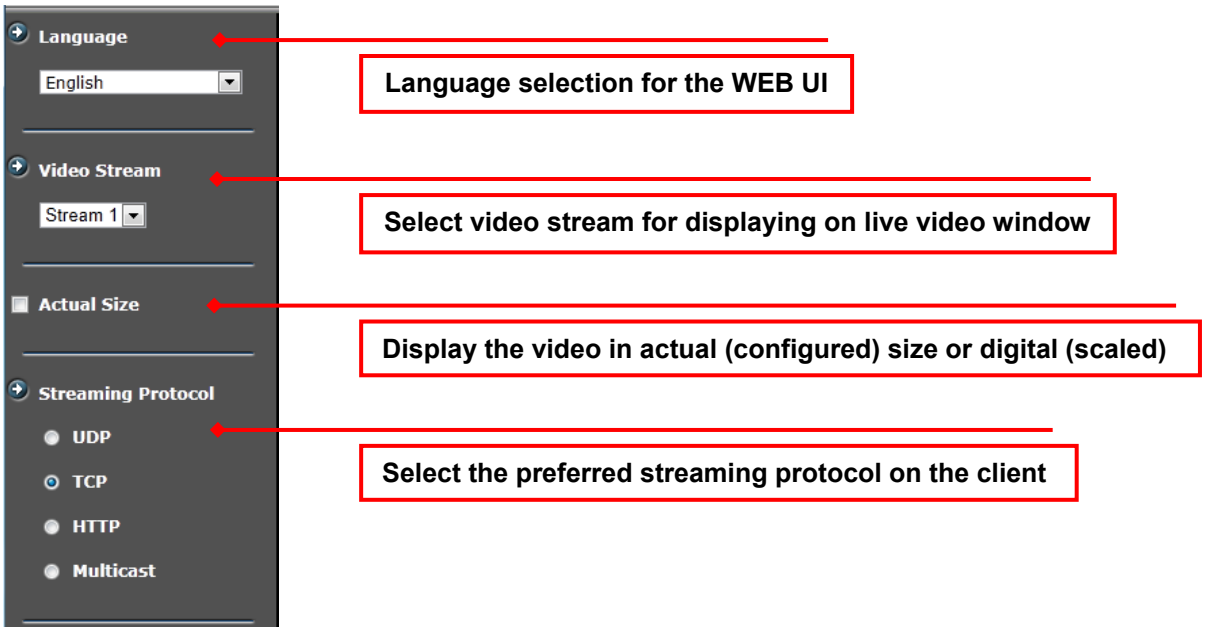
Manual Trigger: Press the button as triggering an event. See ***Event Management*** for detail.

Listen: Enable / Disable to receive video from camera

Talk: Enable / Disable to send audio to camera

Digital Zoom: toggle the digital zoom function.

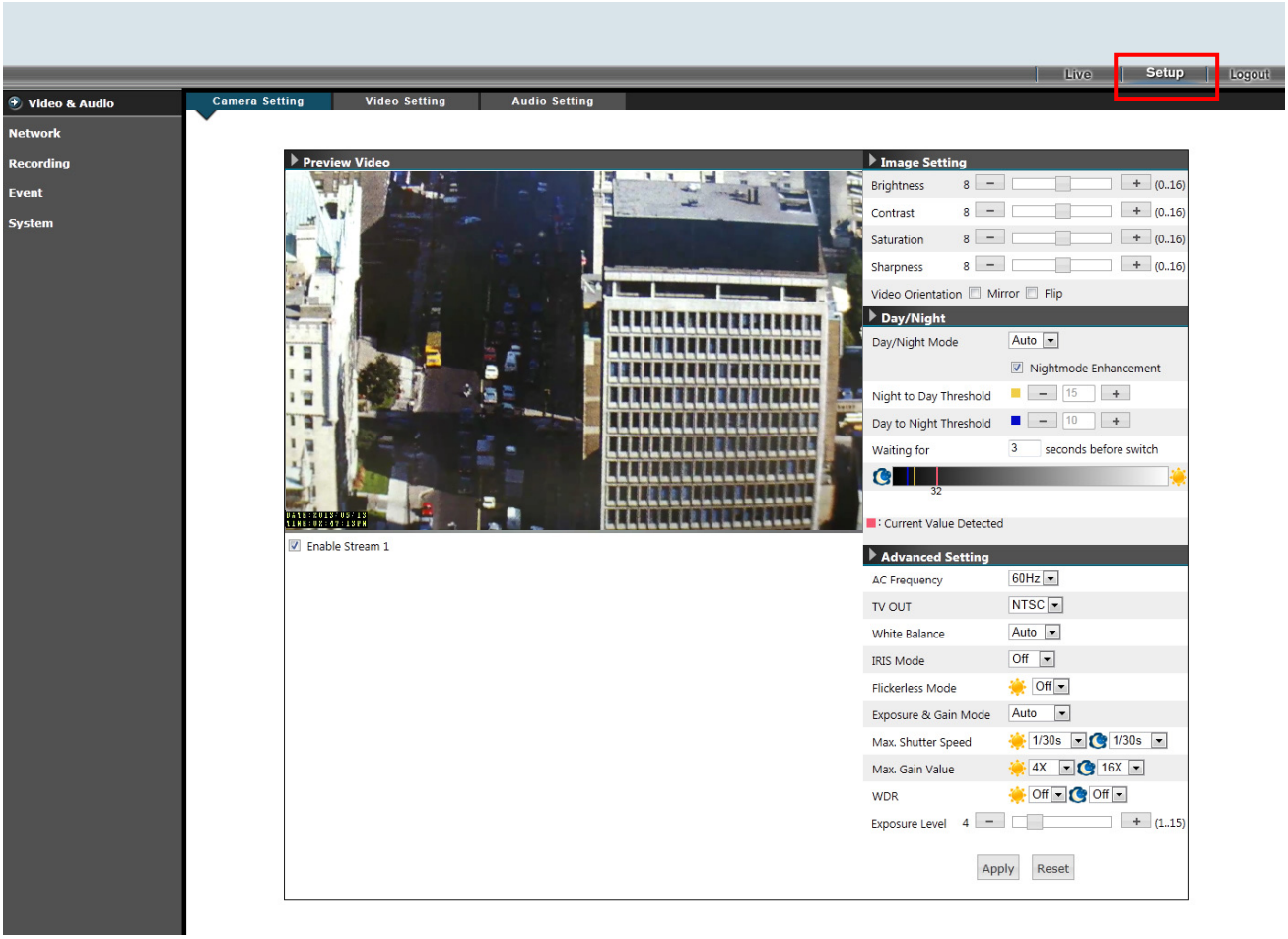
Video Stream Operations



Video & Audio

This section describes how to configure the video streaming of the device and the related camera image configurations. Users with Administrator or Operator authority (see ***System → User Management***) are able to do these configurations.

Click on "**Setup**" of Quick Index to enter the "**Video & Audio**" page shown as below.



There are 3 sub-settings under **"Video & Audio"**:

- **Camera Setting**
- **Video Setting**
- **Audio Setting**

Camera Setting

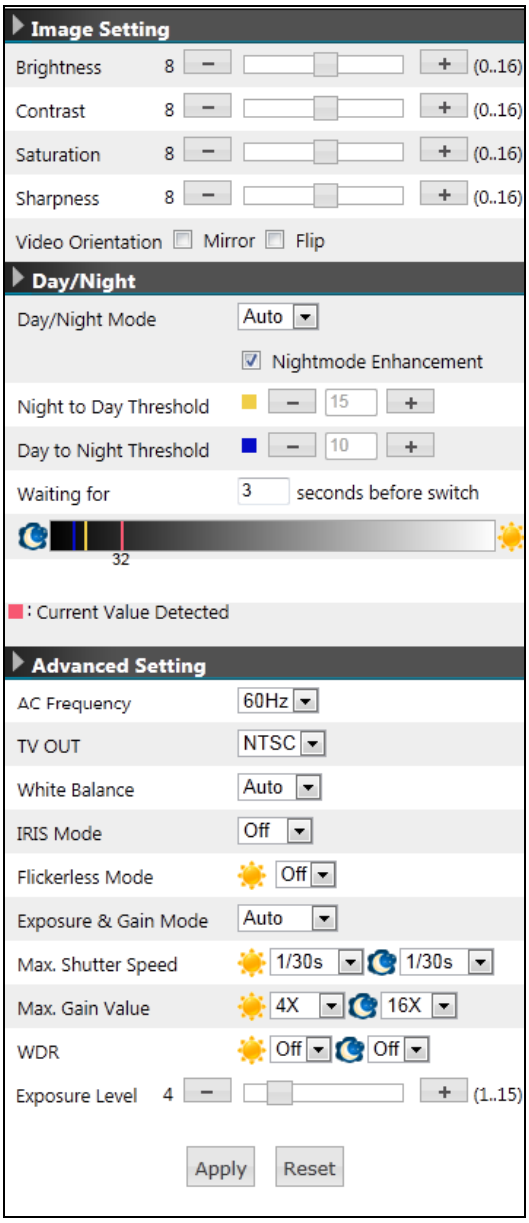


Image Setting

Brightness: the luminance of image view. Default value is 8; adjustable from 0 to 16.

Contrast: the ratio of luminance of white to black. Default value is 8; adjustable from 0 to 16.

Saturation: colorfulness of a color related to its own brightness. Default value is 8, adjustable from 0 to 16.

Sharpness: refer to image acutance, which presents in the edges contrast of an image. Default value is 8, adjustable from 0 to 16.

The 4 correlates are referring image appearance in terms of color/vision that is adjustable according to user preferences.

Video Orientation: change the image orientation.

- **Mirror:** rotate the image horizontally.
- **Flip**: rotate the image vertically.

Note: These operations are usually applied when camera must be installed in an exceptional position. For the example of ceiling installation, camera must be installed upside-down.

Day/Night

Day/Night Mode:

Switch the video images for **Day** (plenty of light) or **Night** (Low light) scene. In default "Auto" mode, camera will switch to Day or Night vision according to the light intensity. The Day / Night modes contain 2 actions: switching IR Filter **On / Off**, and image hue **Color / Mono**.

In day mode, the IR filter is switched in to avoid the image sensor from receiving the infrared, thus the true color image is provided. When camera enters night mode, IR filter is switched off to allow IR illuminations going into the sensor, thus increasing the images light level. The image color is switched to B/W (Mono mode).

Nightmode Enhancement

With this function enabled, the better night vision will be obtained. However, the number of FPS may drop depends on the actual environmental illuminations.

Night to Day Threshold

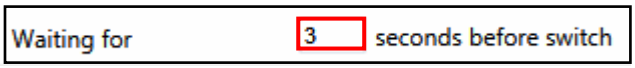
The value reflects the timing switching from night to day.

Day to Night Threshold

The value reflects the timing switching from day to night.

Switch Time

The value reflects the delay time for both ways of day and night switch.



Advanced Setting

AC Frequency: Anti-flicker setting for environment with fluorescent light sources, image sensor needs to fit the frequency of light (power) source. For instance, the power frequency is 50Hz for most European countries, while 60Hz is typically for US. This setting is therefore regionally different.

TV OUT: Option of NTSC or PAL.

White Balance: The selections for enable auto white balance function or just make it as fixed. The default setting is set to AUTO.

IRIS Mode: Enable auto IRIS mode when DC-Iris lens is installed. System will enable auto exposure and gain control. The default value is set to OFF.

Flickerless Mode: Flickering can also present in various exposure level. Set "Flickerless" Mode "On" to fix the maximum shutter speed (auto exposure control). Thus, the flickers can be eliminated. The default value is set to OFF.

Exposure & Gain Mode: Select auto / manual Exposure & Gain control mode. The selection defines the controlling in a range of or fixed value, according to the following two items (**Shutter Speed** and **Gain Value**). The configurations will be limited at selected maximum rates when AUTO mode is on.

Max. Shutter Speed: Also refer to refer to exposure time. Higher shutter speed is normally applied under strong light circumstance, so the image won't be overexposure. Lower shutter speed, on the other hand keeps image luminance in low light environment.

Max. Gain Value: Also refer to the amplification factor for the incoming light. Increasing the gain value provides a brighter image, but the noises may also be increased.

WDR: Enable this function for enhancing image under backlight circumstances.

Exposure Level: Adjust Exposure level for a target level of sensed brightness. Auto exposure function will adjust to exposure time to make the sense image brightness close to the target.

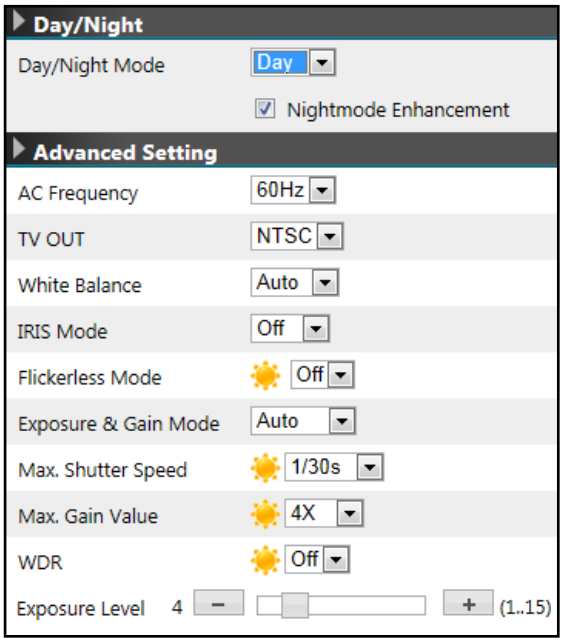
NOTE

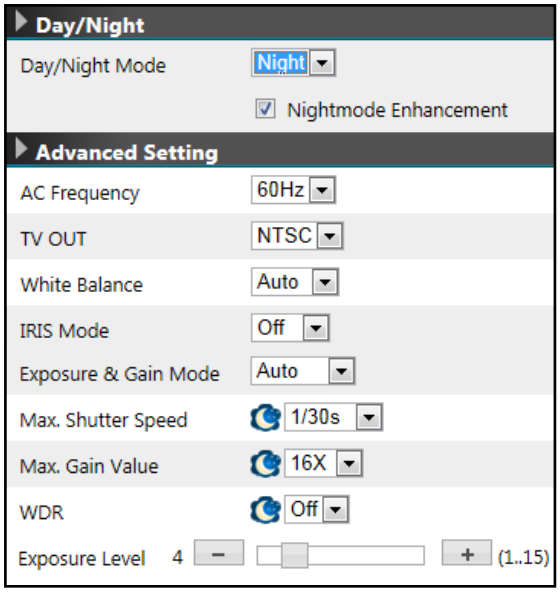
The "**Shutter Speed**", "**Gain Value**" and "**WDR**" can be configured for daytime and nighttime. The configurations will be applied according to the current status of "**Day/Night Mode**".

: represents the Day mode

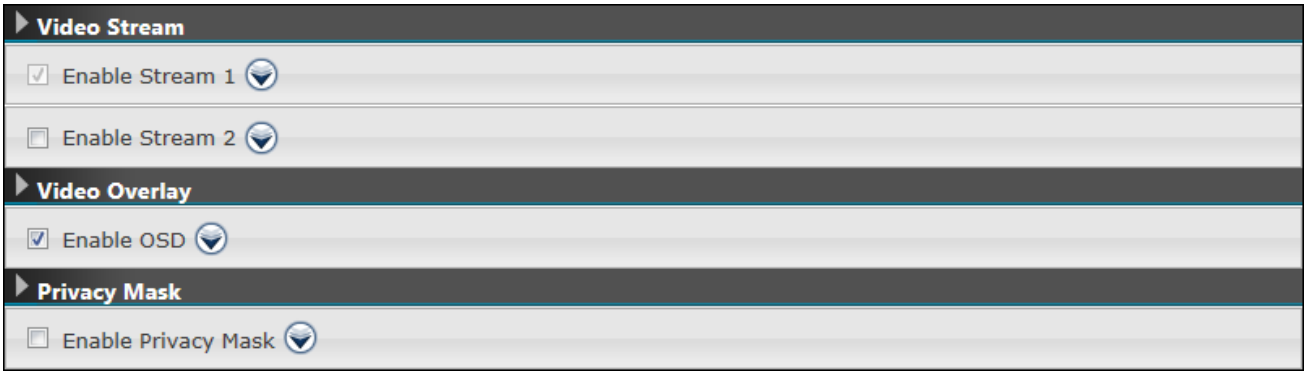
: represents the Night mode

The setting items with the Day or Night mode symbol will be altered along with the setting of Day/Night mode. The examples are illustrated as below.





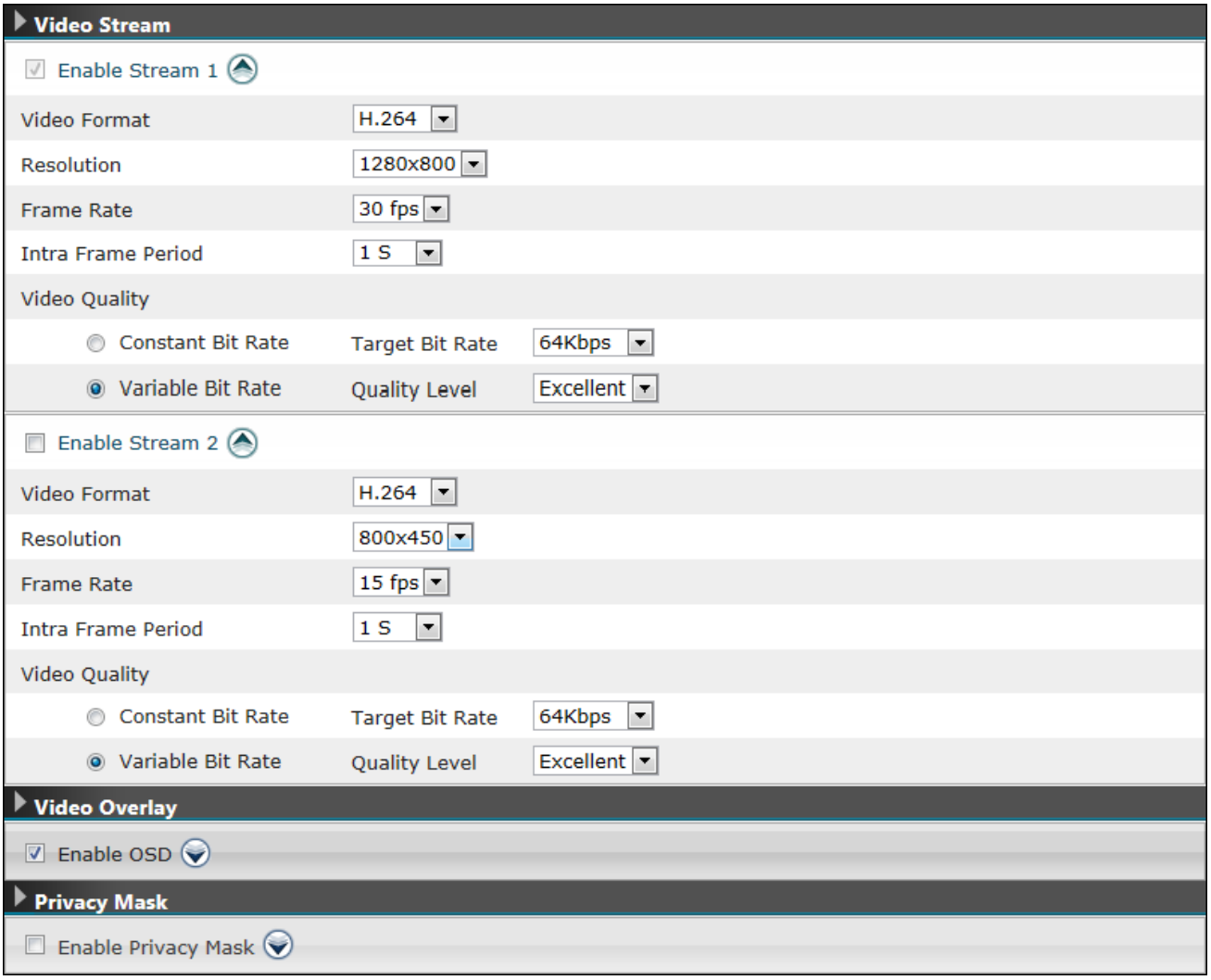
Video Setting



Video Stream

This tab provides detailed stream configurations. These settings can affect video size, quality. The maximum transmission performance can be expected under the condition of full network bandwidth.

The camera supports up to 2 video streams. Each stream can be configured with following items.



Video Format: H.264, MPEG4 and MJPEG are available for the selection. The demand of bandwidth and storage requirement differs from the selection of video format. In the request of same video quality, H.264 contributes to less bandwidth and storage requirement, which can be more efficient than MPEG4 or MJPEG.

Resolution: The resolution here describes an image size counted in width by height, e.g. 1280x720, referring to **pixel resolution**.

The available resolutions for Stream 1 and Stream 2 are listed in the following table.

Resolution	Stream 1	Stream 2
1280 x 800	V	-
1280 x 720	V	-
800 x 450	V	V
640 x 360	V	V
320 x 180	V	V

"V": available
"-": not available

Frame Rate: It represents the number of frames that are displayed per second. The higher the frame rate is the better/smoother the video stream can be obtained. However, it would be the tradeoffs for the higher network bandwidth and storage requirement.

Intra Frame Period: This is applied only in MPEG4 / H.264 which the video stream is composed of **I**-frames (full image information) and **P**-frames (motion-compensated difference information).

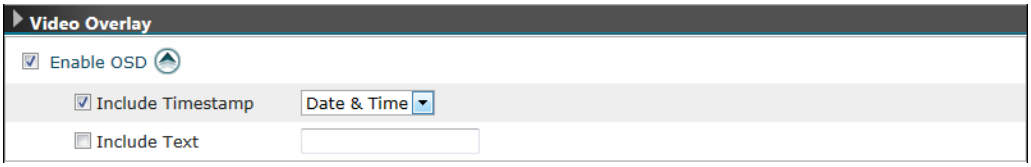
This setting configures the time period between 2 **I**-frames. The shorter period means the higher frequency of I-frame. Video can then be well handled whereas the bit rate may increase.

Video Quality: There are two types of bit rate controls for video quality adjustment, Constant Bit Rate (CBR) and Variable Bit Rate (VBR).

CBR mode concerns about the circumstances of fixed data rate transferring. However, VBR is utilized when network bandwidth is less concerned.

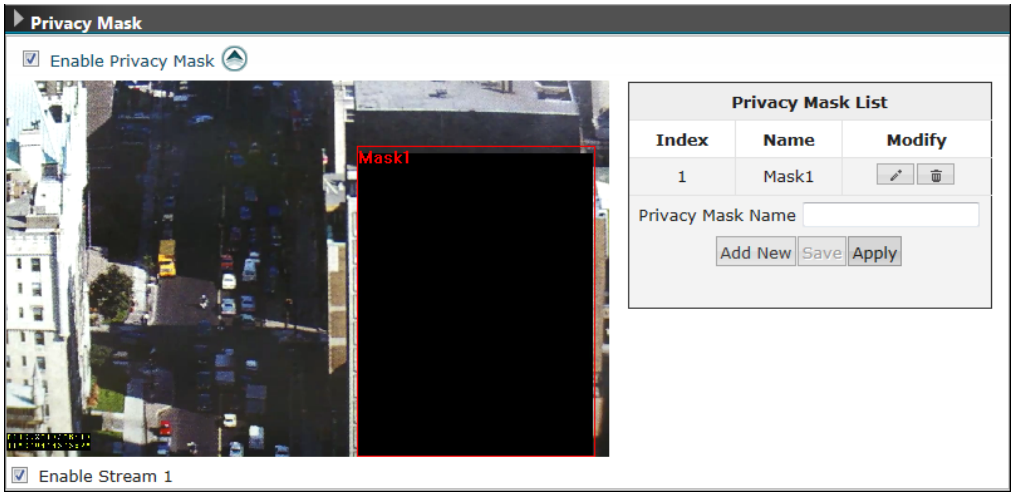
Note: *CBR is not applicable in MJPEG video mode*.

Video Overlay



The camera supports stamping text information on the video images. The options of the date/time string or/and a line of text message (e.g. camera name or location) are available for displaying on the images.

Privacy Mask

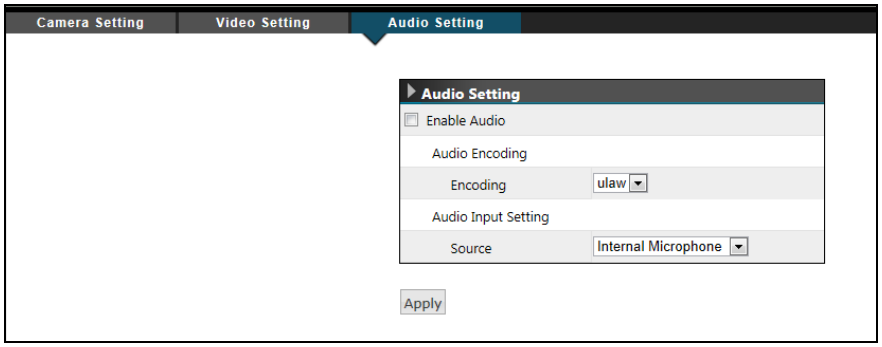


Privacy Mask can block out the specific areas from view. The blocked areas will not be seen in both live view and recorded video clips and the total of 8 profiles can be created to the list.

To create Privacy Mask, simply input Privacy Mask Name and click "**Add New**" button and then apply it to complete the addition.

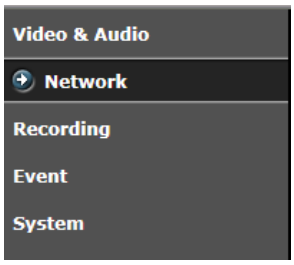
Audio Setting

Check the "Enable Audio" checkbox to enable the video streaming with audio. The audio encoding supports G.711 ulaw. For Audio Input Setting, there are two types of input sources: Internal / External Microphone. The default setting will be internal microphone.



Network Configuration

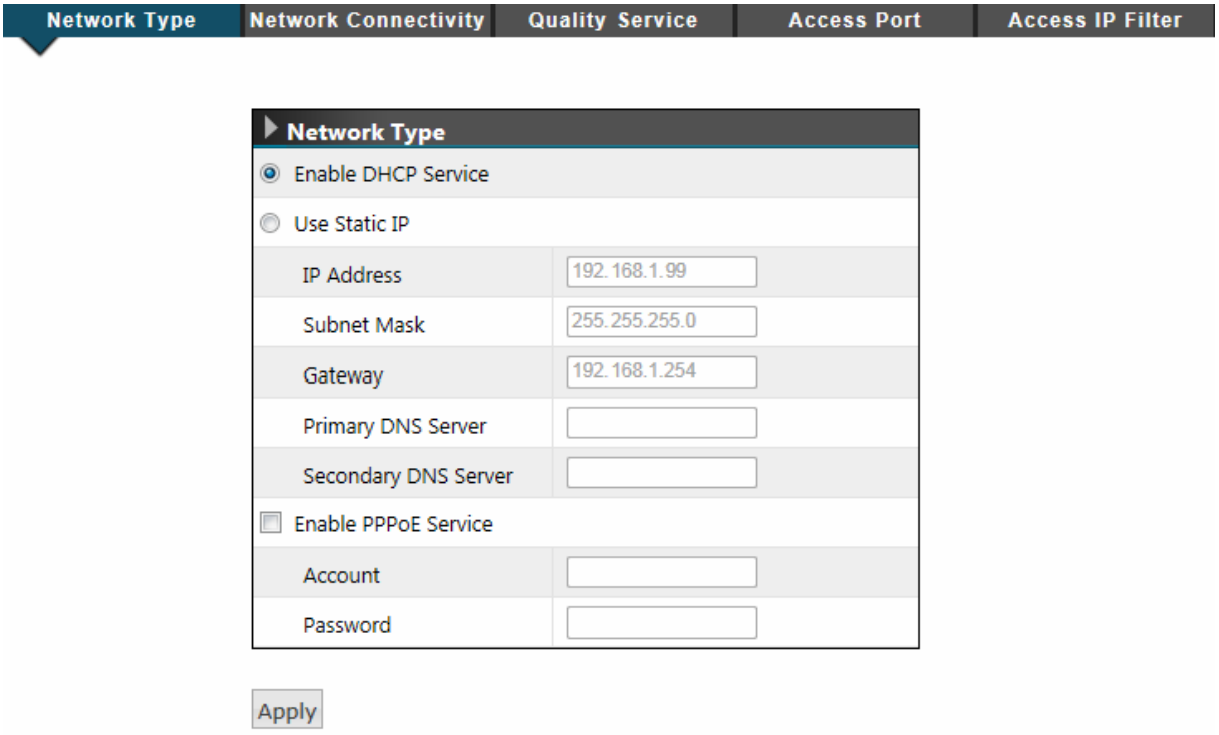
The IP Camera acts as one of the network devices. It allows user to configure the network functionalities based on applications. This section will describe the network configurations. Fundamentally, for instance, the IP assignment of the device can be done via **DHCP server**, **static IP option** or **PPPoE** to obtain IP from the service provider.



There are 5 subdirectories in “Network”:

- **Network Type**
- **Network Connectivity**
- **Quality Service**
- **Access Port**
- **Access IP Filter**

Network Type



Network Type

There are 3 ways to configure IP address for the IP camera device, including **DHCP**, **Static IP** and **PPPoE**.

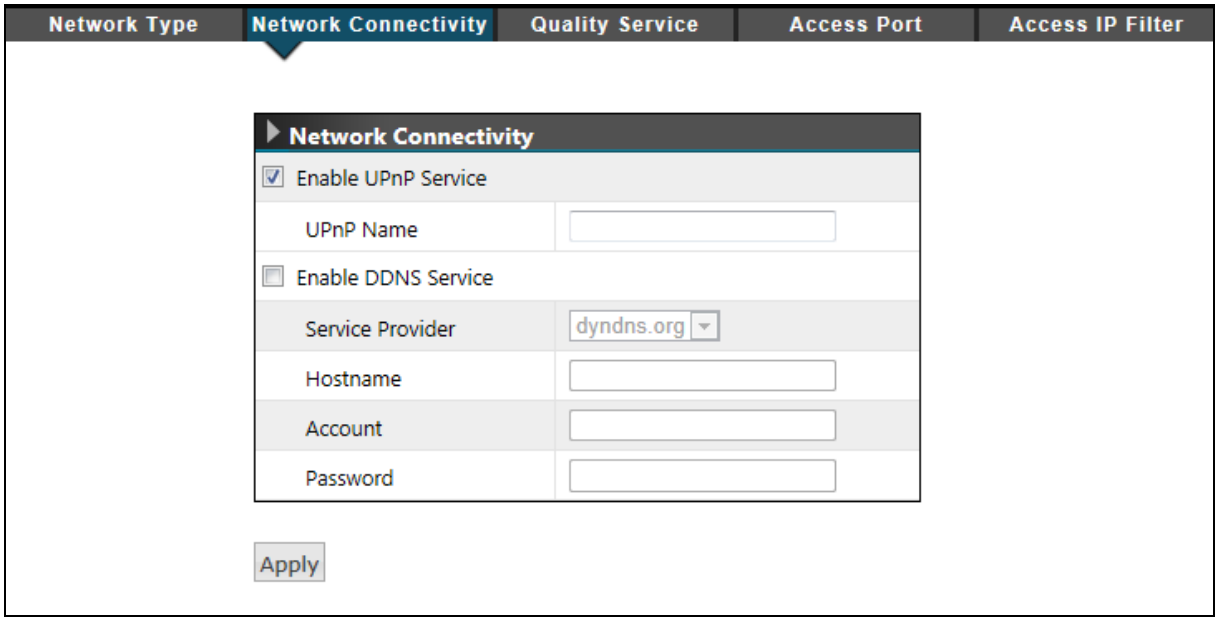
Enable DHCP Service: The default setting is DHCP, which camera will be automatically given an IP address in a network with DHCP server.

Use Static IP: Camera may also be manually assigned with a static IP address. Subnet mask, Gateway and DNS server(s) will also need to be specified for certain network function properly executed.

Enable PPPoE Service: This service is usually provided by an ISP (Internet Service Provider). IP Camera can establish a dial-up connection to the ISP and then get connected to Internet.

Network Connectivity

This page provides the connectivity configuration, so that IP camera can be accessed without necessarily providing the numerical IP address.



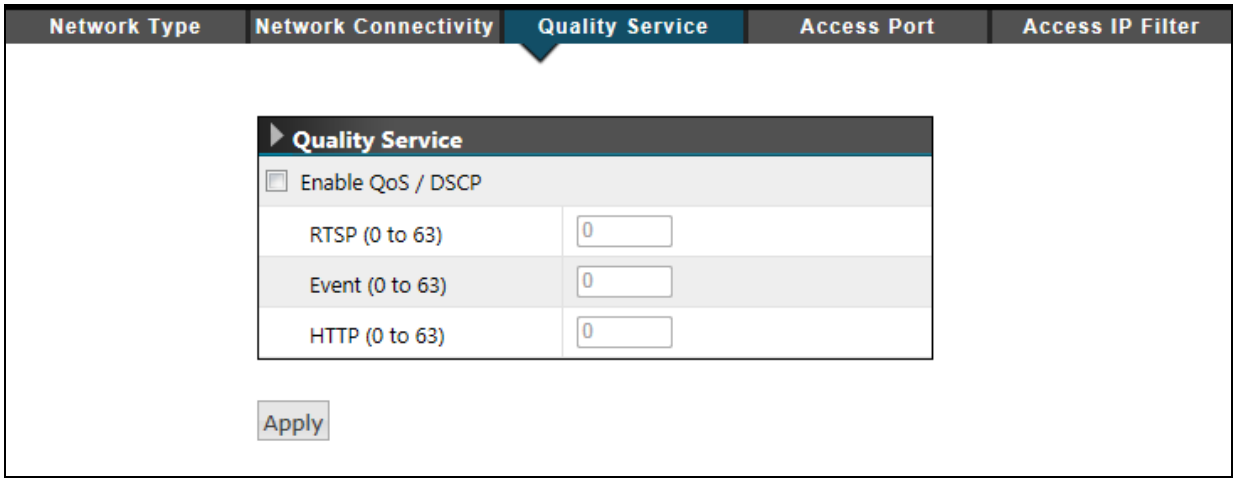
Enable UPnP Service: with UPnP enabled, IP camera device can be easily discovered in Windows Network (My Network Places). See “Discover devices in Windows Network” in previous section.

Enable DDNS Service: By registering this sort of service, camera can be assigned and accessed over Internet with a hostname instead of IP address. To enable the services, visiting the website of the service provider and registering an account are required.

Dyndns.org: http://www.dyndns.com/

Quality Service

Quality Service provides network traffic management to guarantee the quality of services in higher priority, especially when network is insufficient. DSCP (Different Service Code Point) is a 6-bit IP header which defines the service level of the packet. According to the DSCP value, routers with PHB (Per-Hop Behavior) will define a specific class of traffic for the packet, in terms of bandwidth, latency, or loss rate, etc. Enable QoS and set DSCP value for the service to ensure its quality to be maintained.

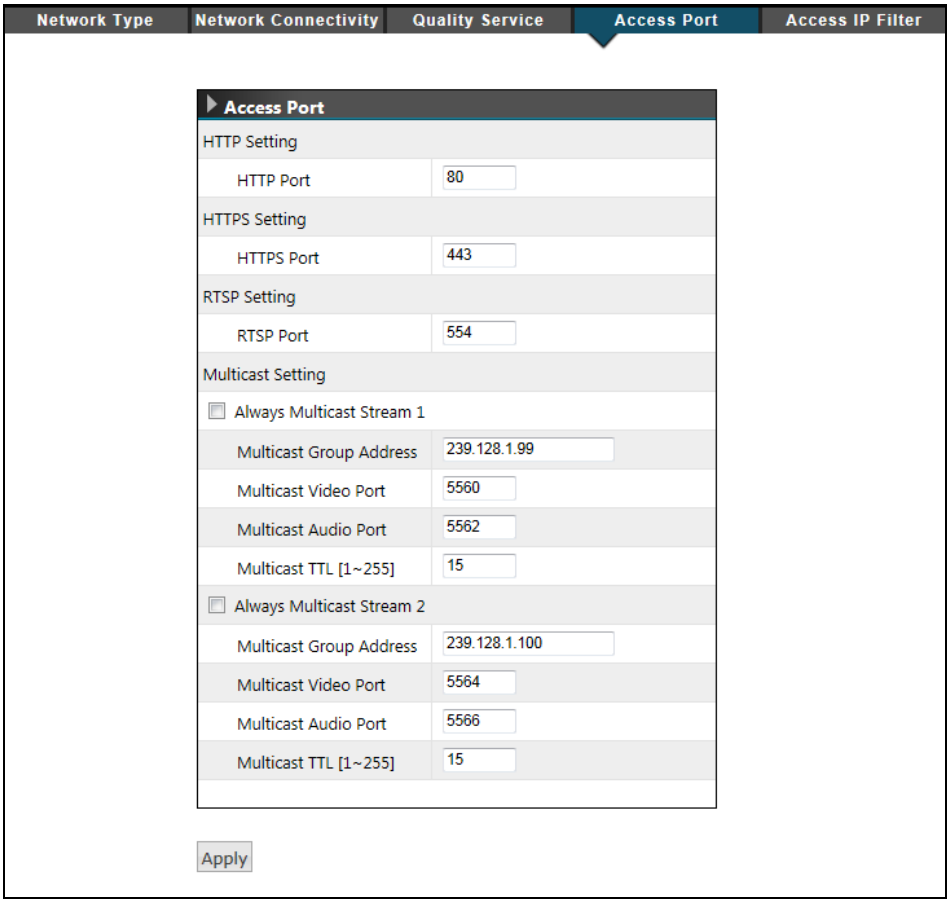


NOTE

To make the QoS function work, all the switches and routers in the network must support QoS.

Access Port

This page provides the ports configuration for requesting the services from the camera device. These services include Web Page access, HTTP and RTSP streaming services.



HTTP port / HTTPS port: By default, the HTTP and HTTPs ports are set to 80 and 443 respectively. They can also be assigned to another port number between 1025 and 65535.

The HTTP port is basically provided for device's webpage access. When the video format is set to MJPEG, user is able to retrieve the live video via HTTP URL, e.g.

Http://<ip_address>/operator/get_video.cgi?channel=[1, 2]

, where channel is to specify stream1 or stream2

RTSP port: RTSP (Real-Time Streaming Protocol) is used to control the live media streaming. This port is provided to request the streaming service. By default, the port number is set to 554. It can also be assigned to another port number between 1025 and 65535.

Multicast: Multicast is a streaming method with bandwidth conserving technology. By delivering a single video stream to multiple network clients, the bandwidth utilization can be reduced.

Select the Always multicast option to enable multicast for stream 1 ~ 2.

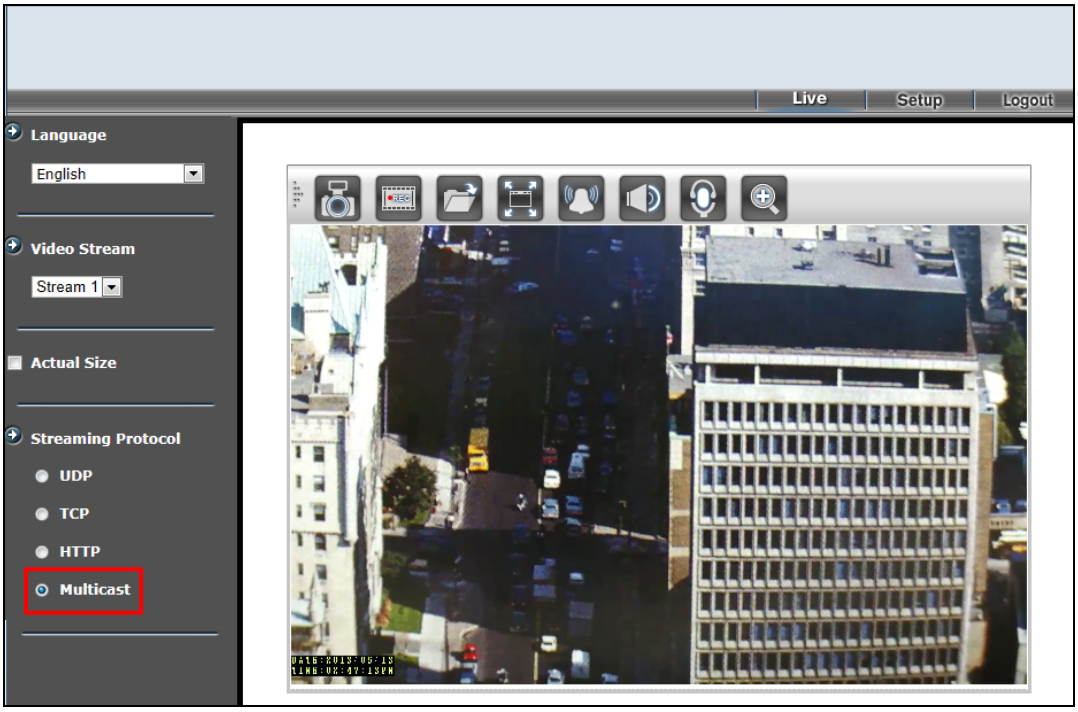
Multicast Group Address – Set the IP address for multicast streaming. The Multicast IP address must be in the range from 224.0.1.0 to 239.255.255.255.

Multicast Ports – Set the port for multicast streaming.

Multicast TTL – The multicast Time-To-Live (TTL) gives the range of routers that multicast traffic can pass through in the networks.

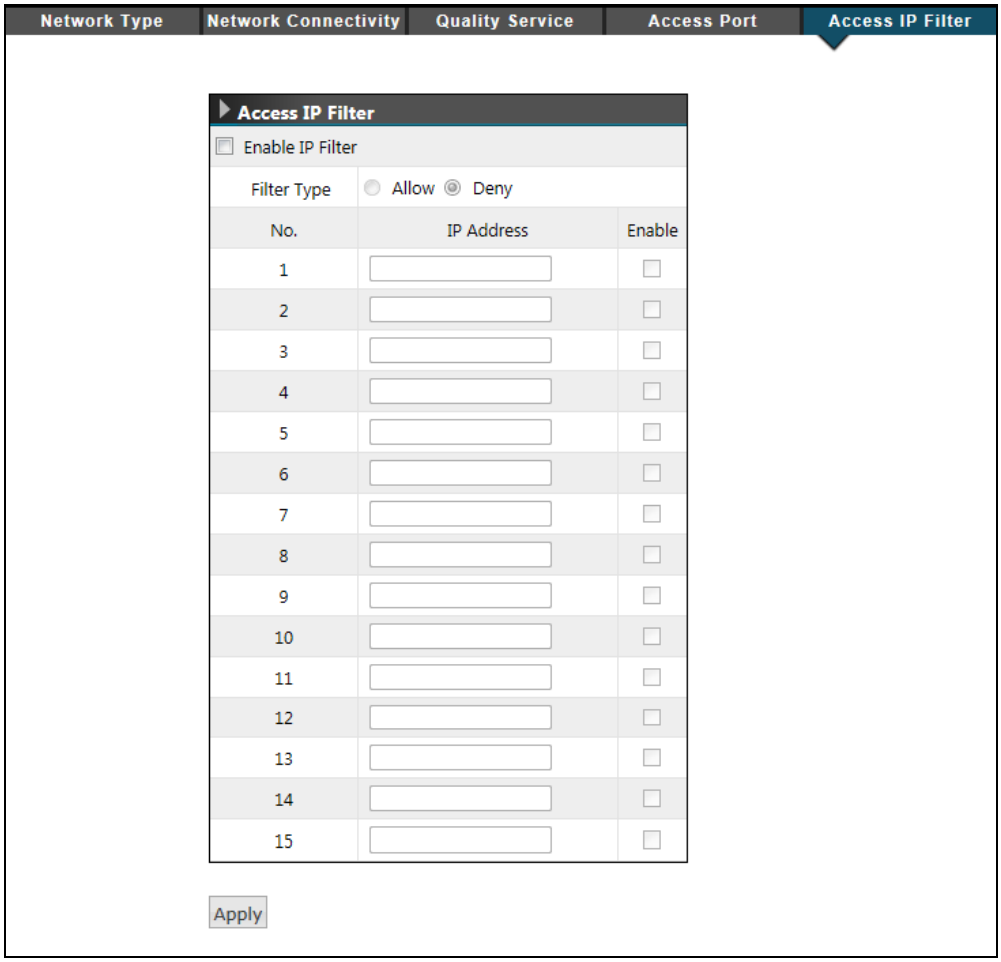
NOTE

The multicast stream can be triggered by a network client (e.g. choosing "Multicast" from the live view page) whereas "Always Multicast" option is not enabled. This mechanism is known as "Multicast On Demand". In this mode, multicast stream starts when one or more clients request. It stops automatically when the last client leaves the multicast group. "Always Multicast", on the other hand, starts or stops multicast stream by enabling/disabling this function. It doesn't matter whether there is client request or not.



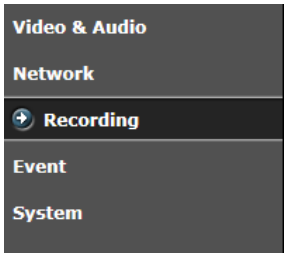
Access IP Filter

This setting also provides a basic security by filtering the accesses from other hosts. Enable this function and choose “Allow / Deny” of the listed IP addresses. Up to 15 IP address can be added in the list.



Recording

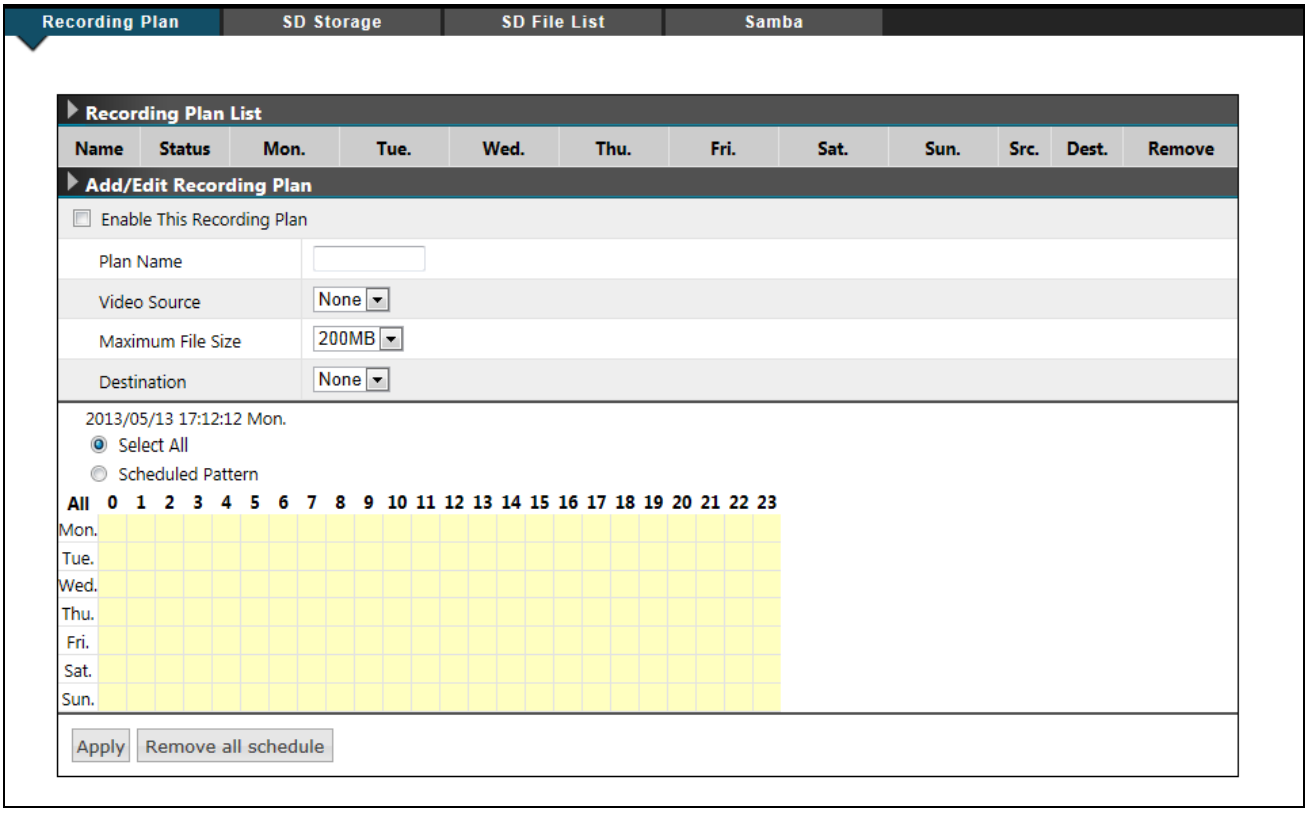
This section provides the recording configuration on the camera. Unlike the recording function (Quick Functional Button) on the live view page, video can also be is recorded to the storage attached to the camera (micro SD card) or local network storage (Samba) according to a time based schedule.



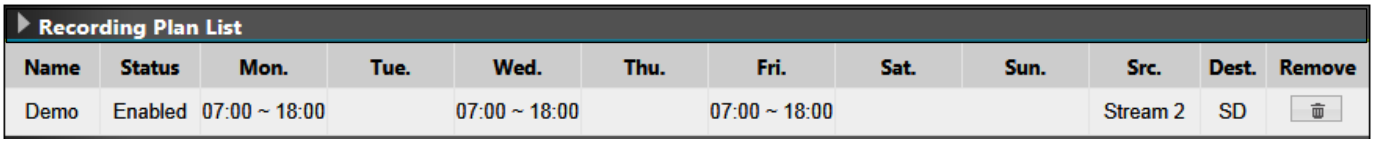
There are 4 subdirectories in the “Recording” category:

- **Recording Plan**
- **SD Storage**
- **SD File List**
- **Samba**

Recording Plan



Recording Plan List


Recording Plan List
Name Status Mon. Tue. Wed. Thu. Fri. Sat. Sun. Src. Dest. Remove
Demo Enabled 07:00 ~ 18:00 07:00 ~ 18:00 07:00 ~ 18:00 Stream 2 SD

It lists the created/scheduled recording plan(s). The details of a recoding plan include:

Name: Identifier of the recording plan

Status: Enable or disable the recording plan

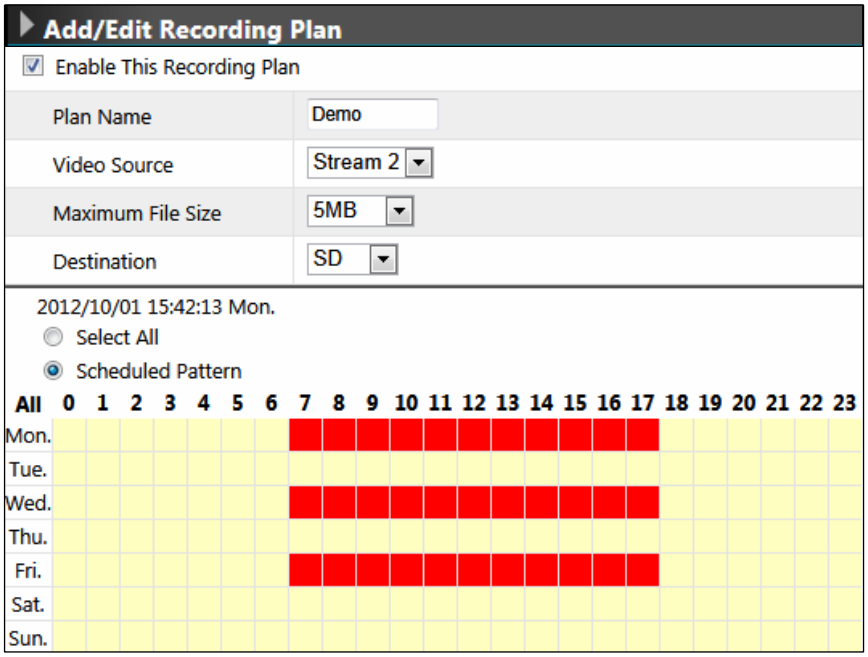
Mon ~ Sun: Displays the hours in days of a week that recording is effective

Src. (Source): The video source selected

Dest. (Destination): The stored path for the recording file

Remove: Click to delete this recording plan.

Add / Edit Recording Plan



Plan Name: Identifier of the recording plan

Video Source: The selection of the video source to be recorded. Options: None or Stream 2.

***NOTE**: Stream 2 should be enabled prior to recording plan*.

Maximum File Size: This option defines the maximum file size of each video clip.

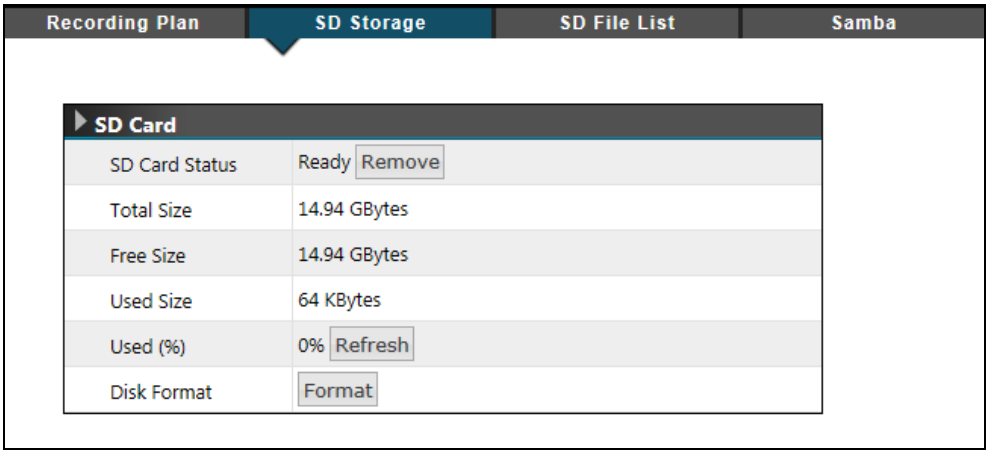
Destination: choose the destination storage for the recorded video files.

Select All: 24/7 continuous recording

Schedule Pattern: User-defined time frame

SD Storage

This page shows the SD card information when it is attached to the IP camera.



Normally, inserting the micro SD card will be done before entering this page and obtain the card information as below. However, if it is the other way around, click **SD storage** tab to refresh it.

SD Card Status:

- **Syncing:** Display when the card database is in the process of synchronization
- **Ready:** Display when the micro SD card is in a ready state
- **Detached:** Display when there is no micro SD card detected
- **Recording:** The micro SD card is being recorded
- **Remove button:** Remove the micro SD card
- **Mount button:** Mount the micro SD card

Used (%): Display the used space in percentage. Click Refresh button to obtain the up-to-dated value

Disk Format: Click Format button to format the micro SD card

NOTE

1. It is recommended to insert the SD card before powering up the system. This is to ensure that the attached device is properly detected in the initial stage.
2. When the SD storage is full, the system will automatically launch overwrite process from the earliest recording files.

SD File List

This page provides the search of records. The SD storage may contain both "**triggered-by-schedule**" recordings and "**triggered-by-events**" snapshot / video. There are search conditions used to narrow down the search results.

The latest 10 Records

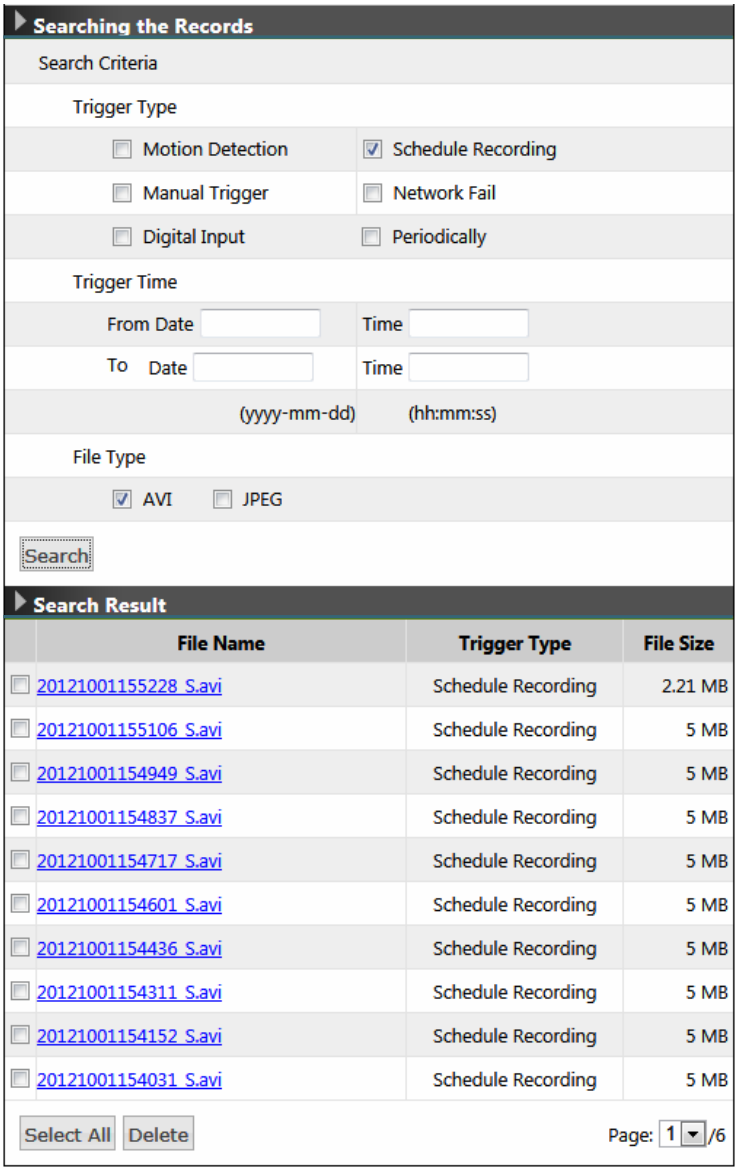
The most recent 10 records are listed in this table. Each record name is a link to view this video or image. Following the "Record Name", each record is listed with its "Trigger Type" and "Record Size" details

Latest 10 Records

File Name	Trigger Type	File Size
20121001155228_S.avi	Schedule Recording	2.21 MB
20121001155106_S.avi	Schedule Recording	5 MB
20121001154949_S.avi	Schedule Recording	5 MB
20121001154837_S.avi	Schedule Recording	5 MB
20121001154717_S.avi	Schedule Recording	5 MB
20121001154601_S.avi	Schedule Recording	5 MB
20121001154436_S.avi	Schedule Recording	5 MB
20121001154311_S.avi	Schedule Recording	5 MB
20121001154152_S.avi	Schedule Recording	5 MB
20121001154031_S.avi	Schedule Recording	5 MB

Searching the Records

The SD storage would keep massive records after the "**recording plan**" and/or "**event handling**" (see ***Event Management***) has been launched. The search criteria are provided to look for particular records in the SD card.



Example:
Trigger Type – Schedule Recording

There are 3 categories of search criteria:

1. **Trigger Type:**

   It includes **Motion Detection**, **Digital Input**, **Manual Trigger** and **Network Fail** and **Periodically** as the type of “triggered-by-events” and **Schedule Recording** as the type of “triggered-by-schedule”.

2. **Trigger Time:**

   Input Date / Time rage that recording was created.

3. **File Type:**

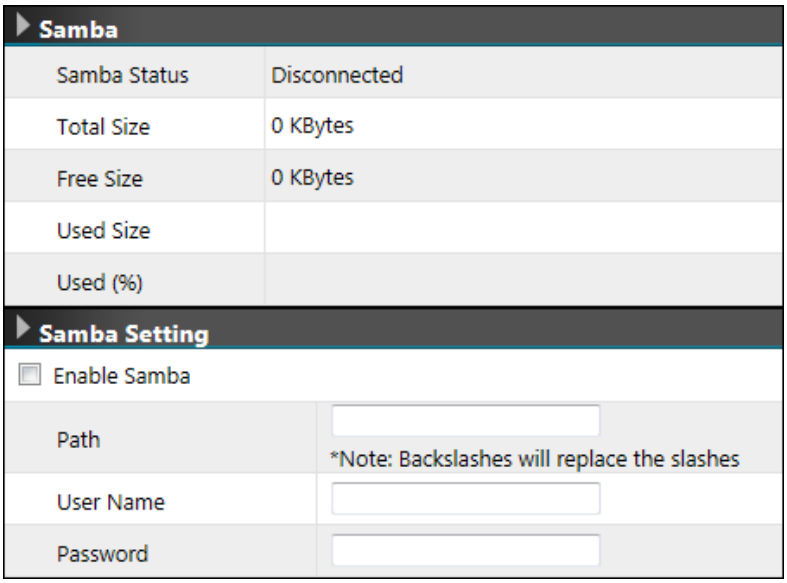
   Select the file type that is either video clips (.avi) or pictures (.jpeg) or both.

NOTE

The search criteria can be multiple selected for each searching. For instance, the search result can be the combination of Network Fail and Digital Input.

Samba

This page allows user to configure the file storage via Samba. To begin with it, click Enable Samba and then input the related information.



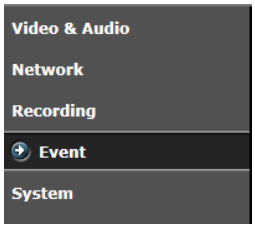
NOTE

Samba can only support mounting a shared folder located in the root directory. For example, to mount a folder called “Shared” can be input the path as below.

Error! Hyperlink reference not valid.

Event Management

Event management describes the handling of events with the corresponding actions. A common case can be exampled is storing a captured image to a local storage (Actions), when there is a Motion Event (Trigger Condition). This chapter gives the configurations of **Triggers** (what to detect?) and **Actions** ("what to send" and "where to send"). A time based schedule can also be applied.



Configuration of Event Handling

There are 4 subdirectories in the "Event" category. The 4 configuration groups are correlated. A completed event setting may need to configure each part in sequence.

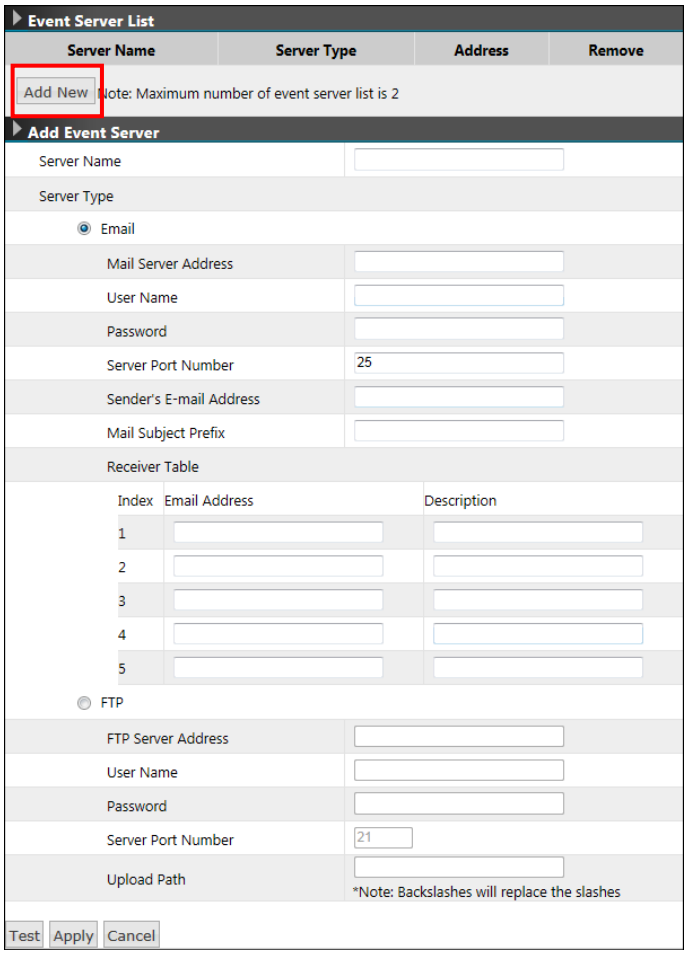
- **Event Server & Media**
- **Motion Configuration**
- **DI/DO Setting**
- **Event List**

Event Server & Media

The "Event Server" is the configuration of "where to send", e.g. FTP server, while Media is the sending file type. The combination of file type and the remote servers will then be applied as an event action.

Event Server List

Click on "Add New" button to add the remote severs. These are email recipients and FTP server.



Server Name: Identifier of the event server

Server Type

Email: Send the media file via email when an event is triggered.

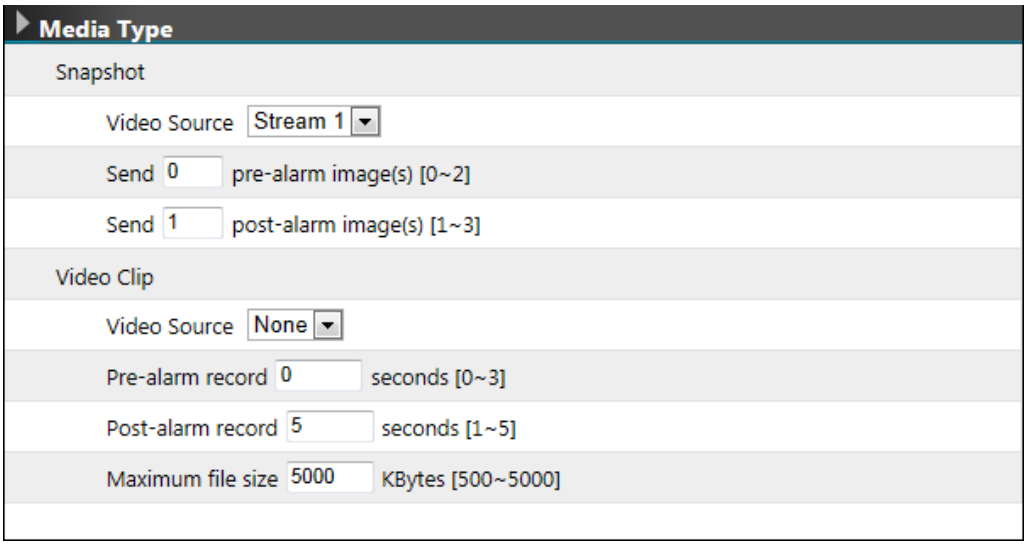
- **Mail Server Address:** Enter a host name or IP address of the email server.
- **User Name:** Enter the user name of the email account.
- **Password:** Enter the password of the email account.
- **Server Port Number:** Enter the server port of the mail server. The default is 25.
- **Sender's E-mail Address:** Enter the email address of the sender
- **Mail Subject Prefix:** Enter the subject description for the mail.
- **Receiver Table:** Enter the recipients' email address. The mail can be sent to up to 5 recipients.

FTP: Send the media file to a FTP server when an event is triggered.

- **FTP Server address:** Enter the FTP server's address.
- **User Name:** Enter the user name of the FTP login account.
- **Password:** Enter the user name of the FTP login password.
- **Server Port Number:** Enter the server port of the FTP server. The default is 21.
- **Upload Path:** Enter the file path that files will be sent to.

Media Type

There are 2 types of media (file) available, **snapshot** (.jpg image) and **video clip** (.avi).



Video Source: Select the video source to be captured

Pre-alarm / Post-alarm image(s): Enter the numbers of images that will be captured before and after trigger is activated.

Pre-alarm / Post-alarm record: Enter the numbers of seconds that video will be recorded before and after trigger is activated.

Maximum file size: Define the maximum file size that a video clip is generated.

Motion Configuration

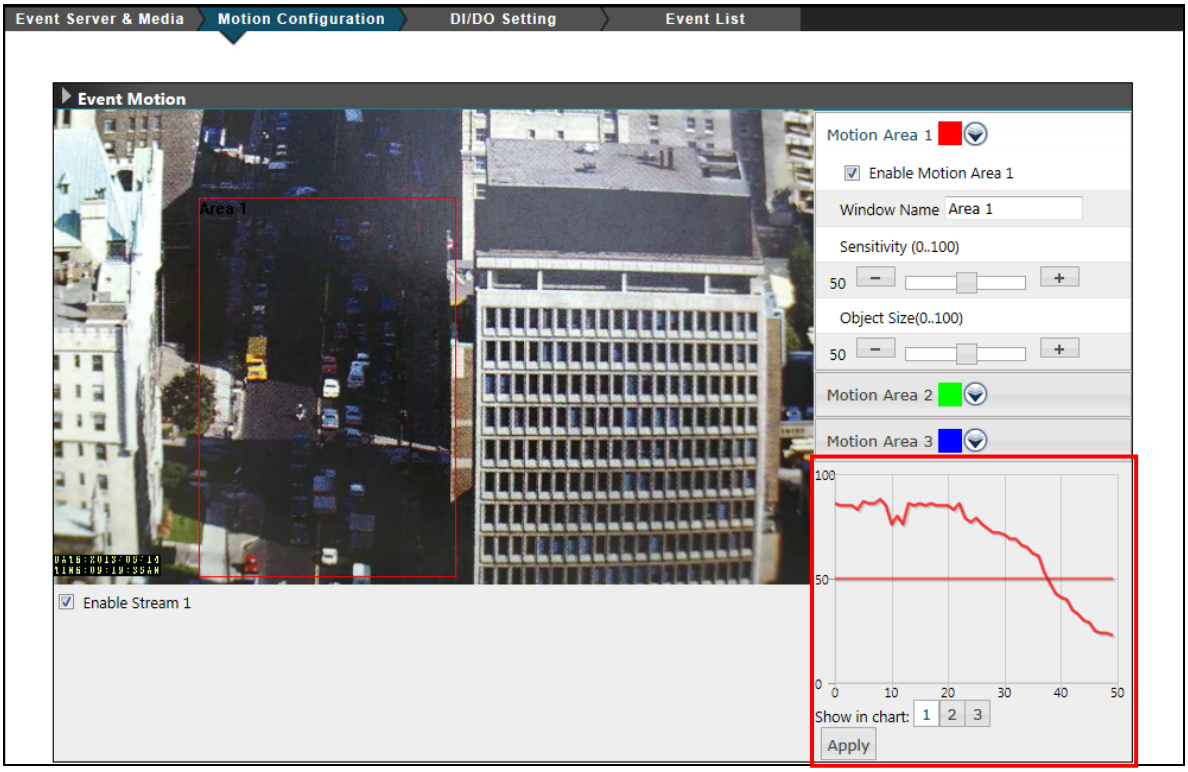
There are 3 MD (Motion Detection) areas can be enabled. Each MD can be individually enabled/disabled, defined the covering range and trigger sensitivity.

To enable and verified the MD, follow the steps provided below.

1. Check the box to enable the motion area
2. Drag and drop to move the motion window
3. Hold and drag any corner of the rectangle to resize the window.
4. By dragging the pin of the slider bars, adjust the detection “Sensitivity” and “Object Size” of the rectangle covered area.

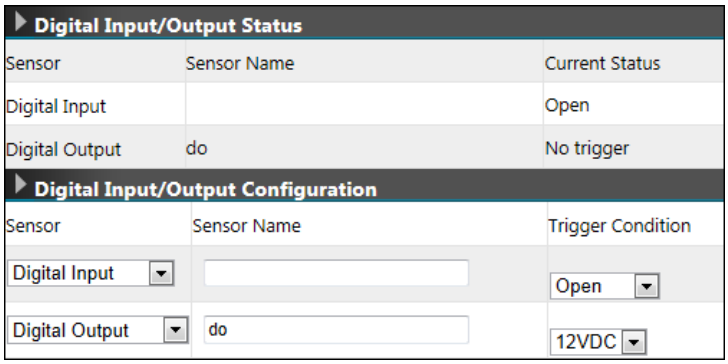
   NOTE:

   By name implying, the “**Sensitivity**” setting means the sensitivity level to the motion detection; the higher value given makes the motion window more sensitive to the moving object. “**Object Size**” indicates the trigger threshold. A lower “Object Size” value means it is easier to exceed the value, and thus trigger the motion event.
5. The status chart shows the motion activities. When the motion vector exceeds a threshold (the Object Size), the motion trigger is activated.
6. To enable other motion area, repeat above steps.
7. Click on “Apply” button to save the settings.



DI/DO Setting

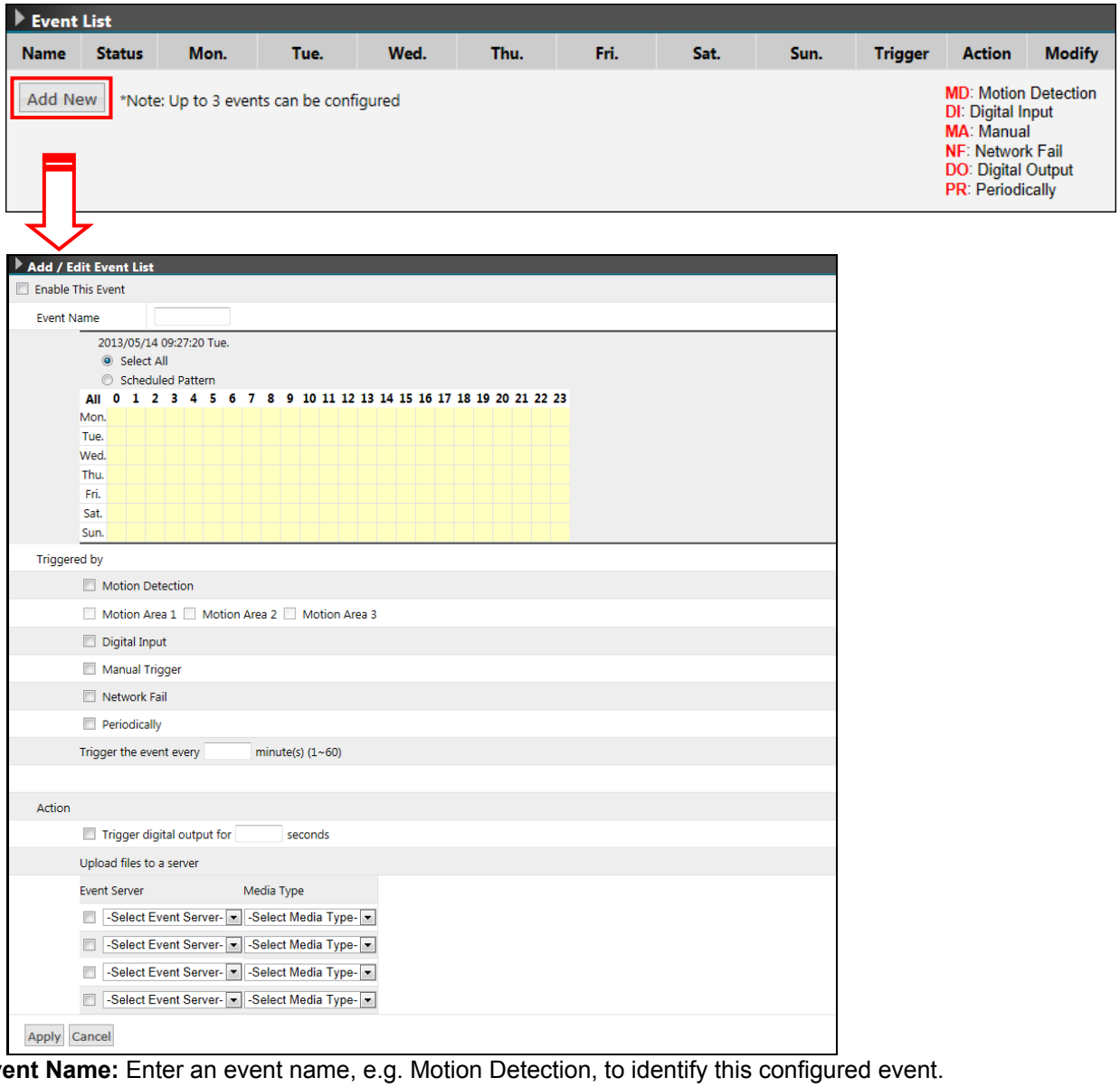
The DI/DO setting provides the information of Digital I/O's trigger condition and current status. Digital input (DI) can be configured as one of the trigger conditions. If the current status of the Digital input (DI) is same as the configured trigger condition of DI, the Digital output (DO) will be activated with configured trigger condition.



Event List

List a summary of configured events. That is the selection of trigger condition(s) and the corresponding actions, as well as the scheduling. Up to 10 event objects can be configured.

To begin with it, click on "Add New" button to extend for the detailed configurations.



Event Name: Enter an event name, e.g. Motion Detection, to identify this configured event.

Select All: 24/7 continuous recording

Schedule Pattern: User-defined time frame

Triggered by: This describes the selection of trigger conditions which include:

- **Motion Detection:** Select the motion detection area(s) used for trigger condition. To enable and configure the motion detection areas, go to ***Motion Configuration***.
- **Digital Input:** Enable system to detect the DI (Digital Input) status as a trigger condition. For more details about the DI setting, go to ***DI/DO Setting***.
- **Manual Trigger:** Enable system to detect the user input action (press the alarm button, on the live view page).
- **Network Fail:** Enable system to detect the network connection status.
- **Periodically:** Enable the system to perform the set Action periodically by entering number of minute(s) in the field as below.

Action: The selection of responding actions

- **Digital output:** Check the box to enable the digital output as a responding action. For detailed configurations, go to ***DI/DO Setting***.
- **Upload files to a server:** This sort of action contains 2 parts; selection of the destination and selection of file type. The destination includes the local SD storage, the FTP server and the email recipients. The file type includes snapshot image and video clip. For detailed configurations, go to ***Event Server & Media***.

NOTE

The dependency of ***Event Server*** and ***Media Type*** is described as below.

- When ***Event Server*** is either Samba or SD card, the selection of ***Media Type*** will be either Image or Video
- When ***Event Server*** is either Mail or FTP, the selection of ***Media Type*** will only be image

Examples of Event Handling

The following cases are provided as the examples of **Event Handling**.

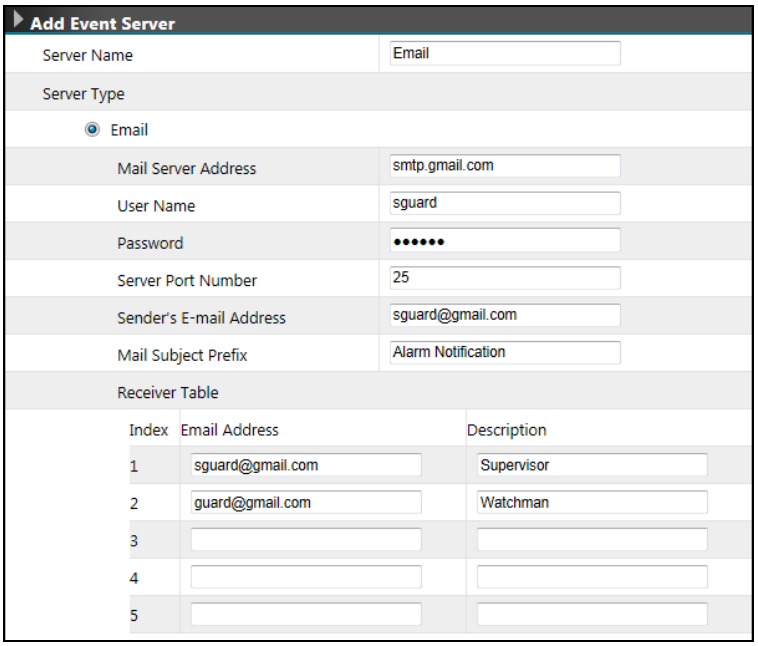
Scenario 1

While viewing live video, user can manually trigger an event anytime simply by pressing the button, ***on the web page. It will then start generating a video clip to SD card and sending email with the captured pictures.***

The configurations are illustrated as below:

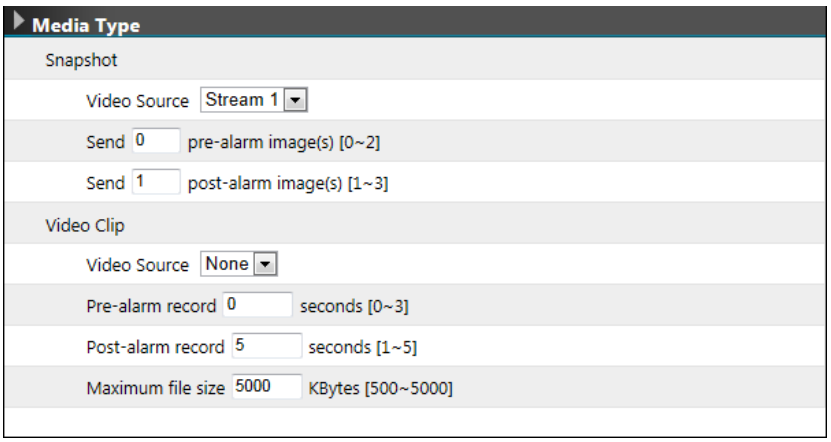
Step 1: Add Event Server

- Go to ***Event → Event Server & Media → Event Server List***
- Click on **"Add New"** button
- Choose **"Email"** and fill in the email server and recipients' information.



Step 2: Configure Media Type

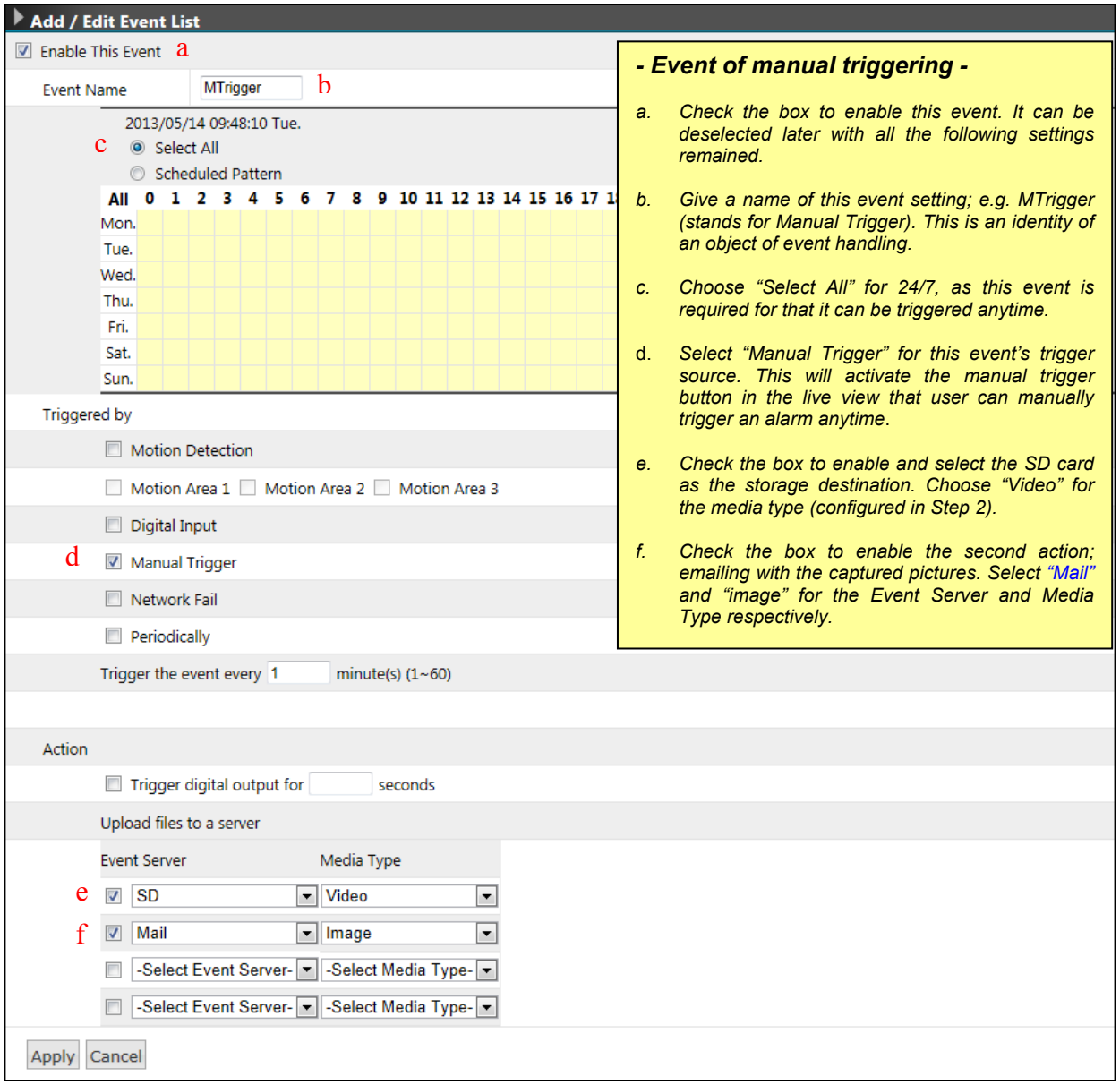
- On the same web page, configure the Media Type. For the following example, the system is configured to capture 1 picture before (pre-alarm) the event and 2 pictures for the event and after (post-alarm). For video clip, both pre- and post-alarm are configured for 8 seconds video record.



- Click on "Apply" to save the email server and media settings.

Step 3: Configure Event List

- On Event List page, click on “Add New” button.
- Enable and configure this event



- Event of manual triggering -

a. Check the box to enable this event. It can be deselected later with all the following settings remained.

b. Give a name of this event setting; e.g. MTrigger (stands for Manual Trigger). This is an identity of an object of event handling.

c. Choose “Select All” for 24/7, as this event is required for that it can be triggered anytime.

d. *Select “Manual Trigger” for this event’s trigger source. This will activate the manual trigger button in the live view that user can manually trigger an alarm anytime.*

e. Check the box to enable and select the SD card as the storage destination. Choose “Video” for the media type (configured in Step 2).

f. Check the box to enable the second action; emailing with the captured pictures. Select “Mail” and “image” for the Event Server and Media Type respectively.

- Click on “Apply” to save the settings of this page.

Scenario 2

A user is to define the motion detection area(s) in the camera view. When someone goes across these areas, camera is aware of the trigger activated and starts generating video clips to SD card. Meanwhile, an illuminator device attached to the camera will be lighted up. This detection should be activated from 22:00 to 08:00 everyday.

The configurations are illustrated as below:

Suppose that the required media type is previously configured. That is the 7 seconds video clip configured in Scenario 1.

Step 1: Define the motion area

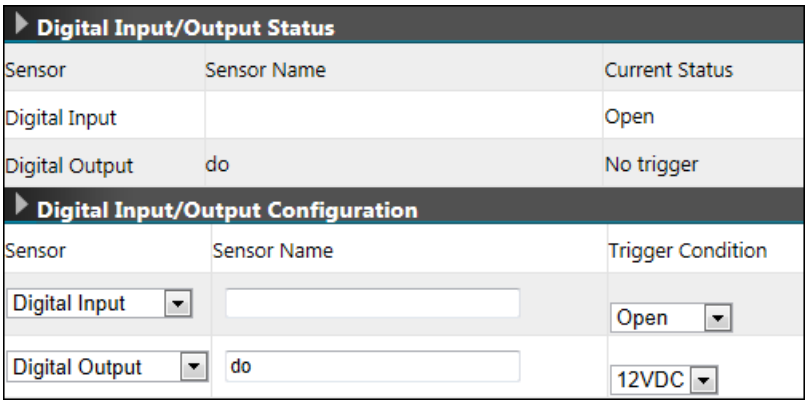
- Go to ***Motion Configuration*** page, and define the MD area.

Step 2: Configure DI/DO setting

- Go to ***DI/DO Setting*** page to set up the "Trigger Condition" of the digital output.

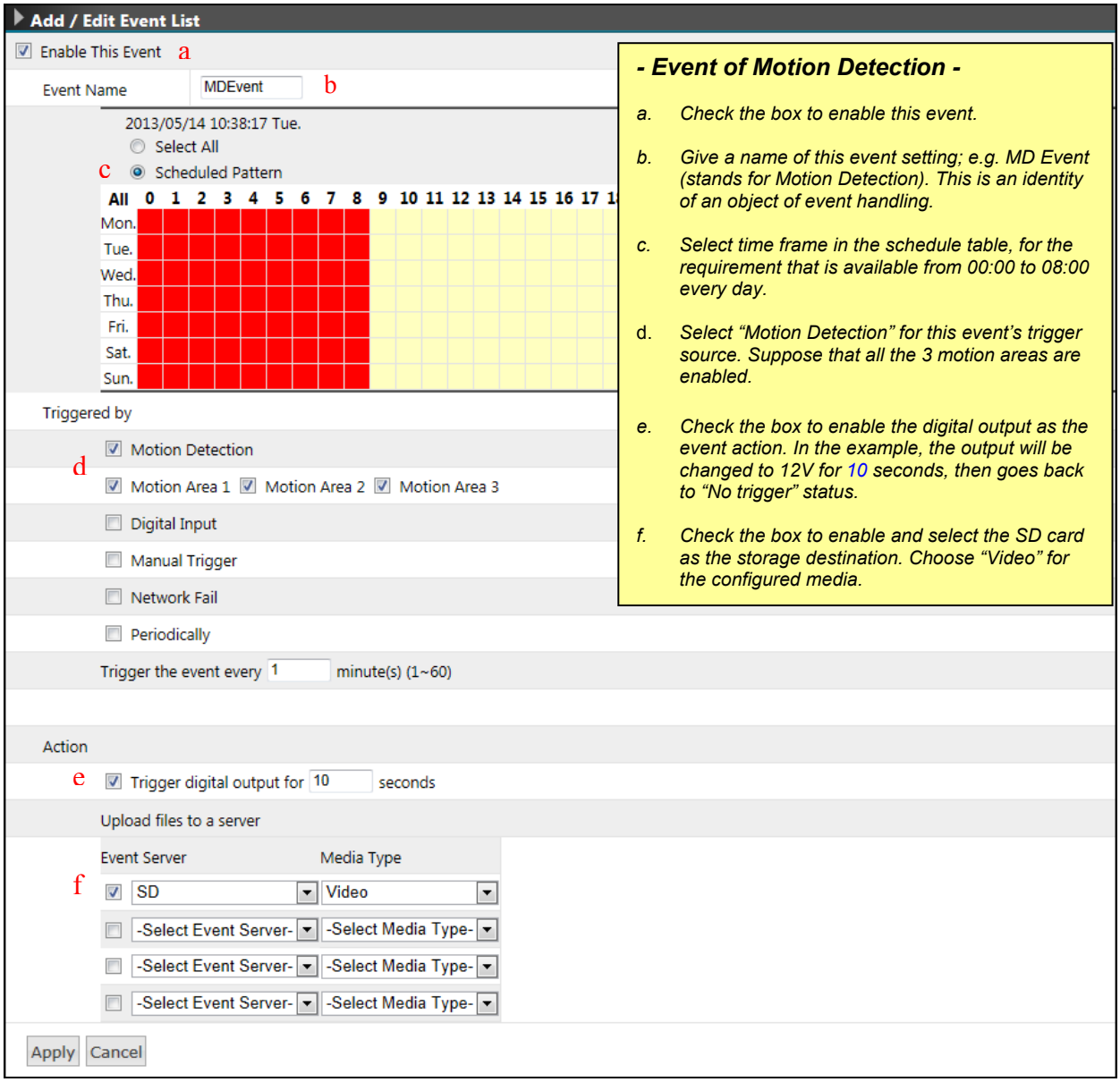
NOTE

The "Trigger Condition" of digital output is the trigger state of the DO pins. In the case, suppose that the connected illuminator can be driven by DC12V. Then the trigger condition needed to be set as "12VDC". When a motion event is detected, camera changes the output status to "12VDC". The illuminator will be lighted up.



Step 3: Configure Event List

- Go to ***Event List*** page. Click on "Add New" button.
- Enable and configure this event
- Click on "Apply" button to save the settings of this page.



- Event of Motion Detection -

a. *Check the box to enable this event.*

b. *Give a name of this event setting; e.g. MD Event (stands for Motion Detection). This is an identity of an object of event handling.*

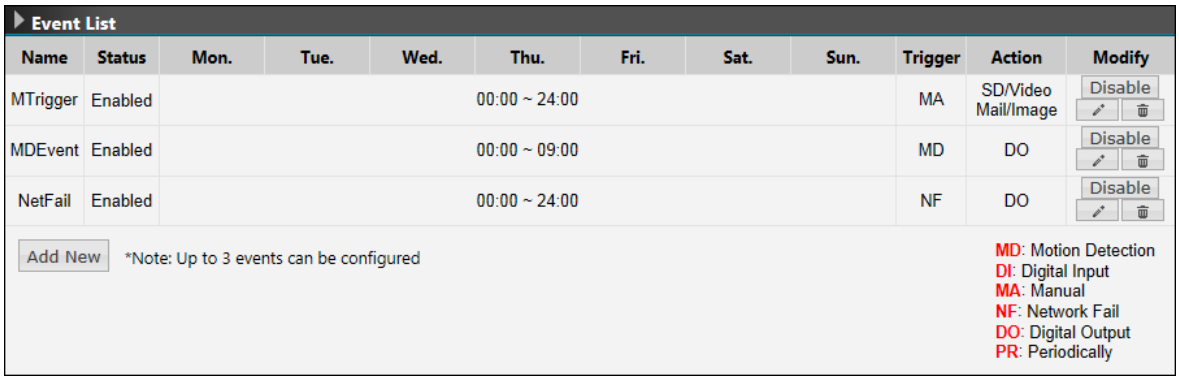
c. *Select time frame in the schedule table, for the requirement that is available from 00:00 to 08:00 every day.*

d. *Select "Motion Detection" for this event's trigger source. Suppose that all the 3 motion areas are enabled.*

e. *Check the box to enable the digital output as the event action. In the example, the output will be changed to 12V for 10 seconds, then goes back to "No trigger" status.*

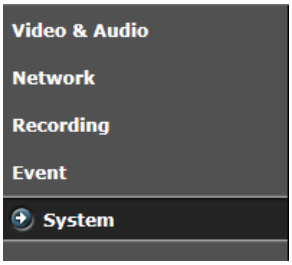
f. *Check the box to enable and select the SD card as the storage destination. Choose "Video" for the configured media.*

The Event List is allowed to add up to 3 event handling illustrated as below. It is the summary of all configured event details.



System Options

System Options provide users to obtain and configure the system settings of the IP camera system. It contains the page of **System Information**, **Date and Time**, **User Management**, **Maintenance** and **Log Service**. The details about each subcategory will be described as below.

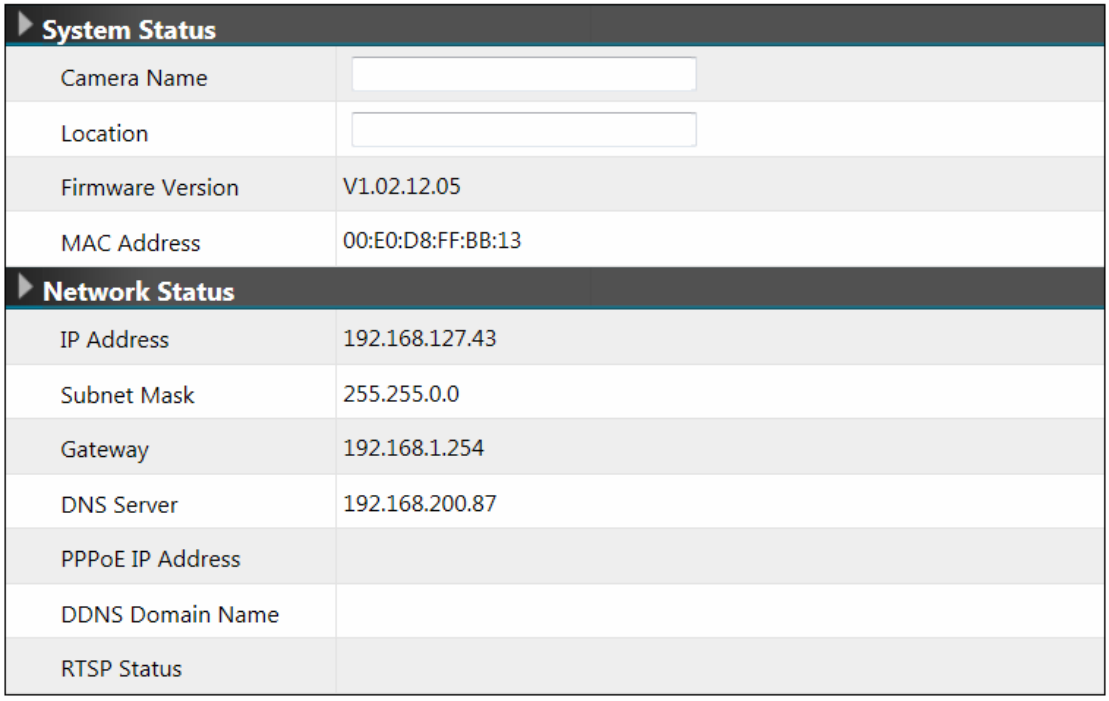


System Information

The page gives details of the IP camera system.

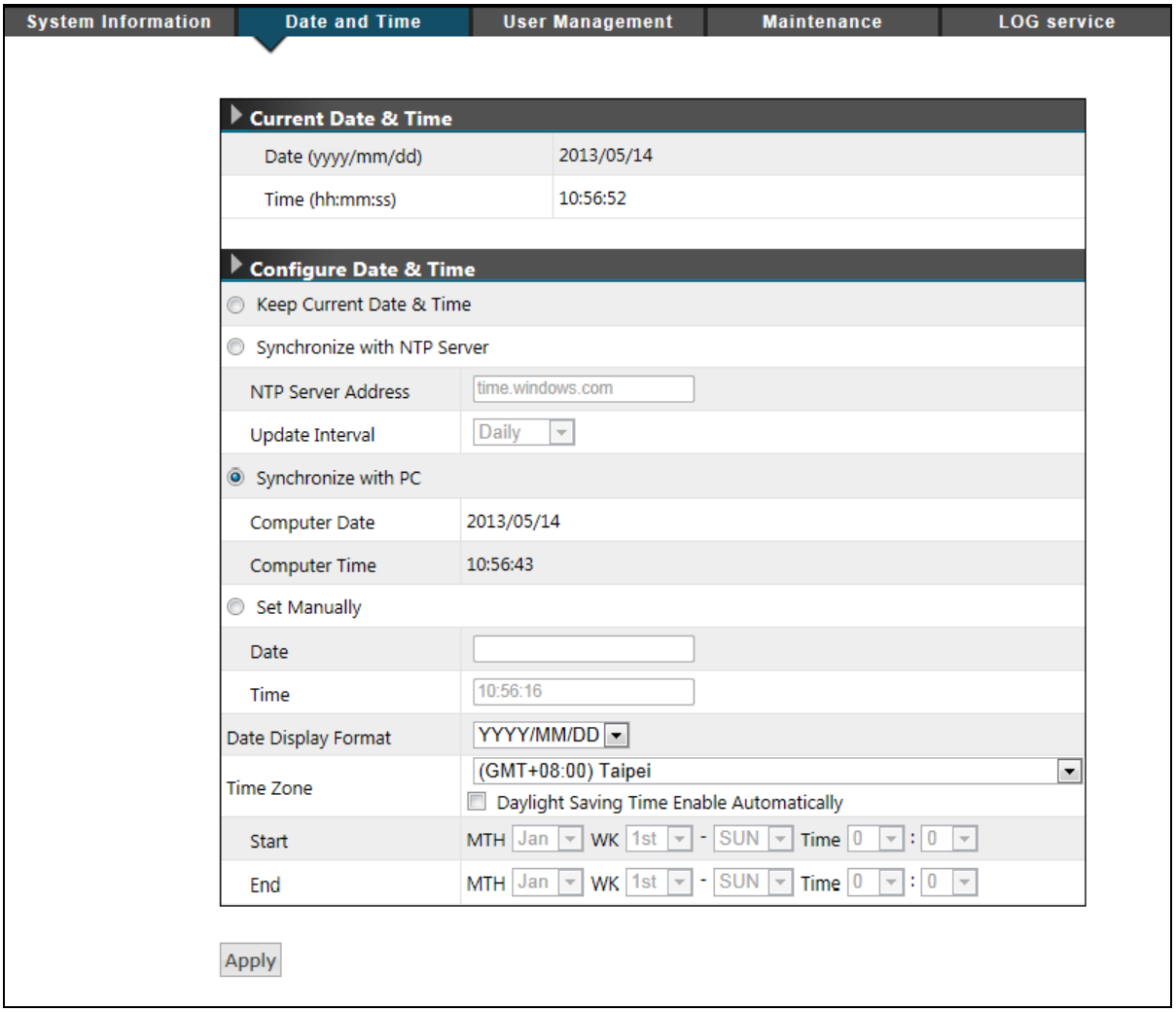
In **System Status**, Firmware Version and MAC Address are listed. The Camera Name and Location fields are revisable to identify a unit among multiple cameras installed.

The IP address info of this IP camera is listed in **Network Status**. The RTSP Status field shows the video stream(s) being requested by the listed client(s).



Date and Time

This section describes the date/time adjustment for the IP camera system. The ways to adjust the IP camera's date/time can be automatic (Synchronize with NTP Server / PC) or manual settings.



Current Date & Time

Display current system date/time of the IP camera. The date format can be changed from the drop-down list in **Configure Date & Time**.

Configure Date & Time

Keep Current Date & Time: The option of keeping current date and time, not to be adjusted.

Synchronize with NTP Server: automatic method for date/time adjustment. The IP Camera must be able to gain access to the given NTP server (e.g. time.windows.com), which is usually the ability of Internet access. The IP camera system can therefore get updated with the time server.

> ***NOTE:*** To apply "synchronize with NTP Server", a **Time Zone** must be selected for referencing to the local time.

Synchronize with PC: The PC connected to the IP camera can also be a date/time synchronizer. However, if the PC is connecting from a **time zone** different from where camera is installed, the system will pop up a warning message for time zone differential.

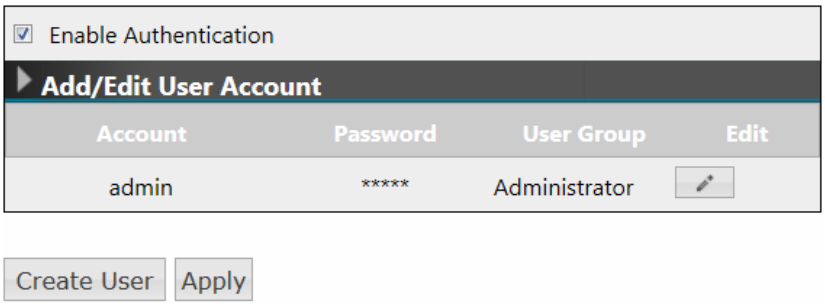
Set Manually: Manually adjust the date / time for the system

Date Display Format: The system date can be displayed in the format of DD/MM/YYYY, MM/DD/YYYY or YYYY/MM/DD.

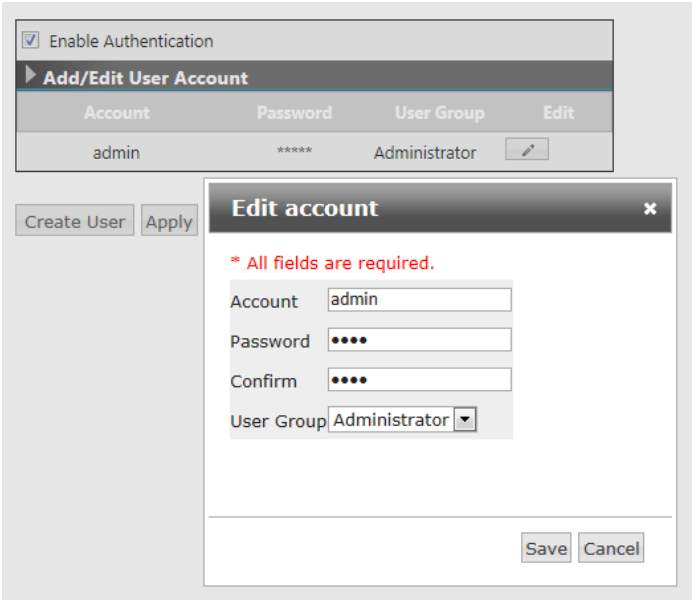
Time Zone: Select an appropriate time zone for local where IP camera is installed. The automatic adjustments will be applied based on the selected time zone. Check the "**Daylight Saving Time"** checkbox for areas that are observing DST.

User Management

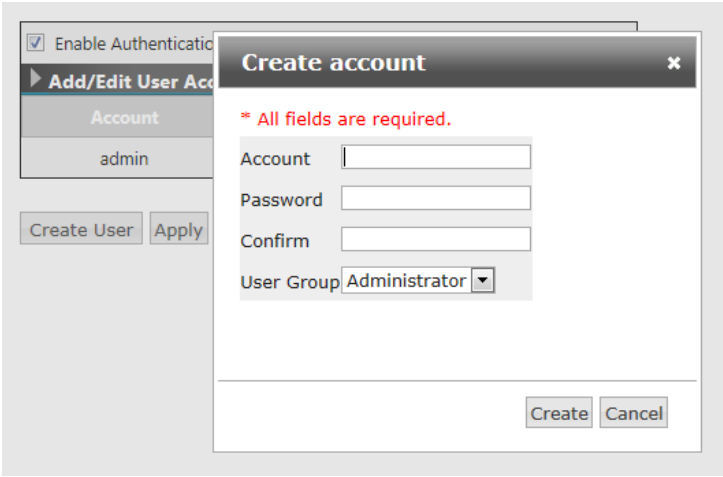
By default, the access to the camera is user authenticated. For security, the IP camera should be restricted to account only accesses. It is able to enable/disable user accounts, as well as to manage the added users in this page.



Initially, there is a default account, **admin** in the **"User List"**. To enable/disable this account, click on "Enable Authentication" check box and then apply. To edit password for the default account, click "Edit" to enter the configuration window.



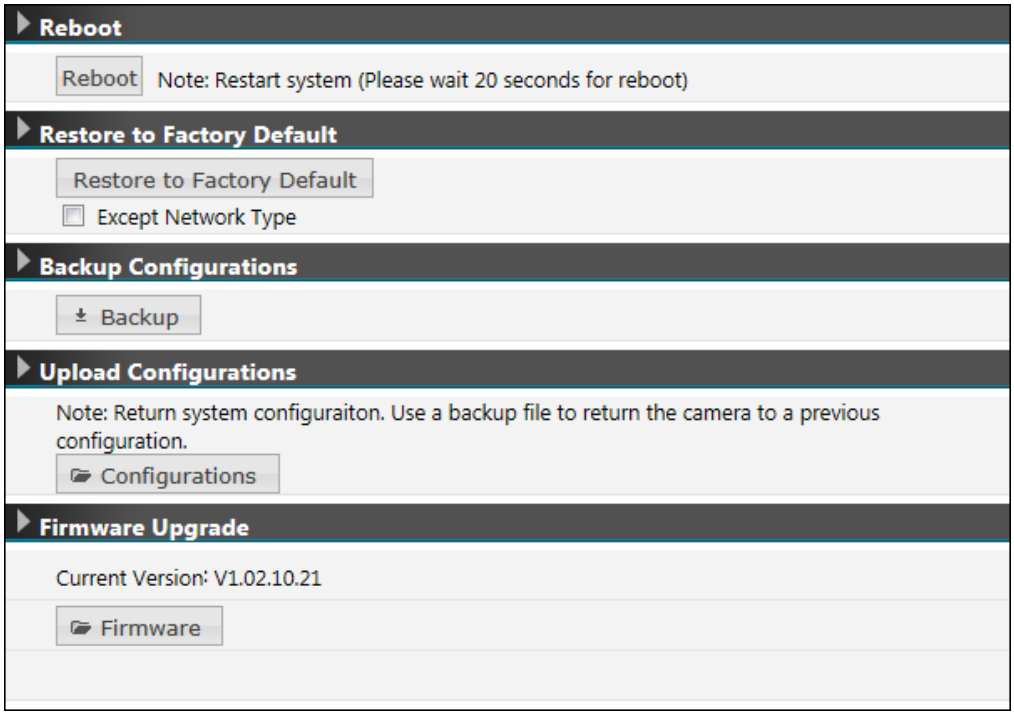
To create a new account, click "Create User" button. Enter Account / Password for this account with the group type on the "Create account" window.



The user account with "**Administrator**" authentication can do all the configurations. "**Operator**" has the same rights as Administrator, except for **User Management**. "**Viewer**" is allowed only the access to live view page. Up to 8 user accounts can be added in the User List.

Maintenance

This page provides tools for camera system maintenances.



Reboot: Restart the camera system

Restore to Factory Default: Restore camera factory default settings. The network setting can be kept by checking the "**Except Network Type**" checkbox.

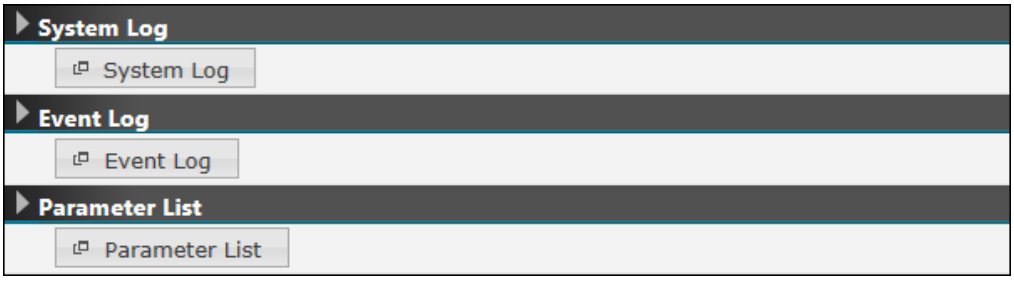
Backup Configurations: The system settings can be backed up and exported to a file. The file can be applied to upload the previous user settings to the camera, or other cameras.

> ***NOTE***
>
> The backup file can be applied to other IP cameras, so users won't need to configure each device. It is recommended to switch the IP setting to DHCP mode before exporting the backup file. Otherwise, all IP cameras will have the same IP address.

Firmware Upgrade: There may be new released firmware for features update or issues fixed. To upgrade the firmware for the system, retrieve the firmware image file, import to the system and then do the upgrade process.

LOG service

The system operations and / or process will be recorded in the log system. The link provides the review of these records.



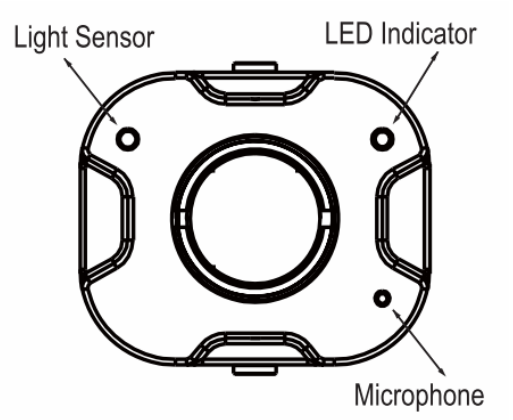
System Log: It contains records of system changes such as login failed or link on/off.

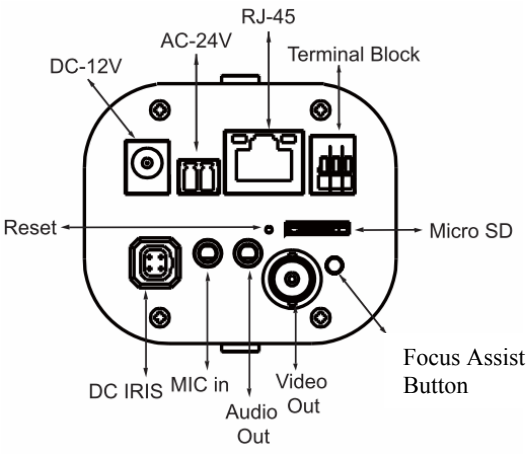
Event Log: It records the log message of triggered event, for instance, motion detection is asserted.

Parameter List: It lists all the system parameters with the current value.

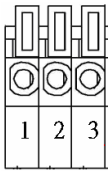
Connectors & LED

Front and Back Panels



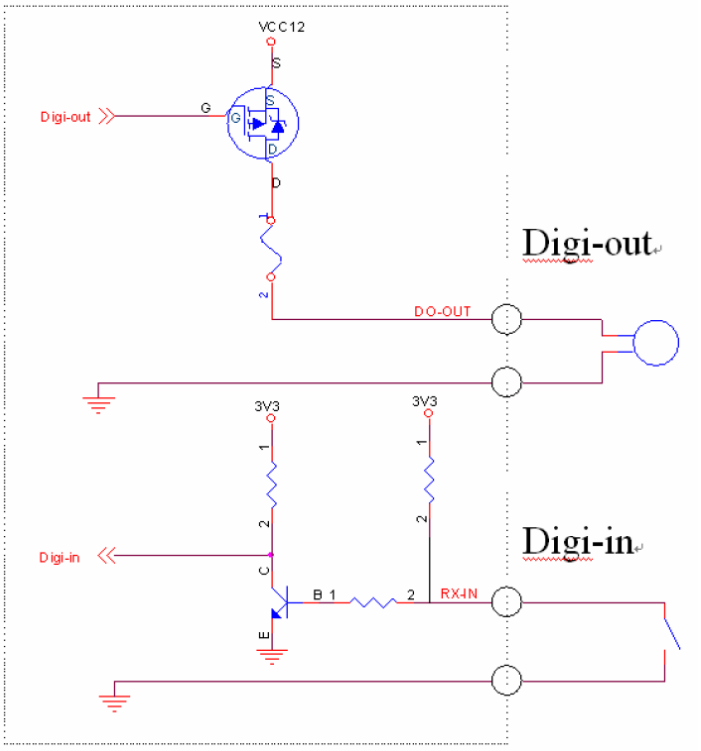


I/O connectors – Pin definitions



Pin	Signals	Function
1	RX-IN	Digital Input
2	GND	Ground
3	DO-OUT	Digital Out

Schematic diagram of Digital I/O



LED Indicators

There are 2 type of LED indicators; RJ45 LEDs (back panel) and System LED (front, bicolor). These LEDs can help to recognize the current device status.

RJ45 LEDs for Network Status:

	LED1 (Green)	LED2 (Amber)
10 Link / Traffic	Steady ON / Flashing	OFF
100 Link / Traffic	Steady ON / Flashing	Steady ON

Bicolor LED indicator for Power & System Status:

	Green
Power On / System Reboot	Steady ON with Amber LED
Initial Process Ready	3 Flashing then ON with Green LED
Normal Operation	Steady ON with Green LED
Firmware Upgrade	Flashing per second with Red LED
Internal (Hardware) Failure	Steady ON with Red LED

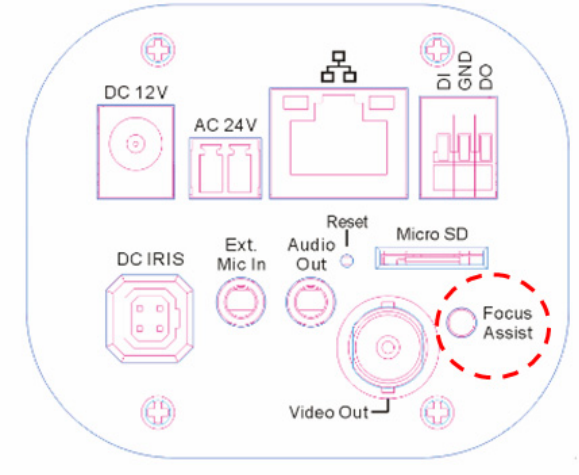
Focus Assist Button

Focus Assist Button allows users to adjust the camera focus with precision by a simple click.

[Steps of Process]

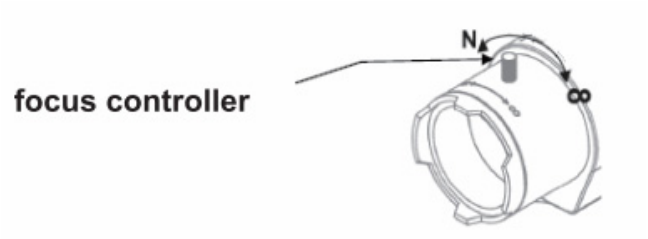
Step 1: "Press" Focus Assist Button

- Rotate the lens focus clockwise or anticlockwise to either end (N or ∞)
- Press and hold the button for 3 seconds until LED indicator flashes from Green light to Amber light.



Step 2: Adjust Focus

- Keep the camera pointing to the same scene during the tuning process
- Start tuning the focus in order to turn the LED Green.
- If LED displays Red light, it indicates the opposite turning direction.



Step 3: Get the Best Focus Value

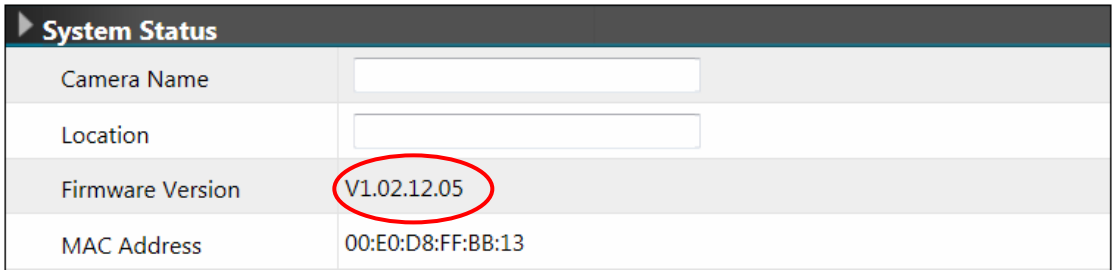
- When camera gets correct focus, the LED will become Green flashing.
- Remain the camera's pointing direction until the LED becomes steady Green

Troubleshooting

Check firmware version

Firmware version may imply the functionalities' updates or availability in the camera system. Therefore, in the first step of troubleshooting and then reporting, it helps to locate the found issues. Newer version firmware may have these issues corrected.

The version code can be found in **Setup -> System -> System Information**, see figure below.



Upgrade device firmware

Firmware upgrade process should be done via the web configuration: **Setup -> System -> Maintenance -> Firmware Upgrade**. Before the process, read the instructions and release notes coming with each new released version.

[Read Before Upgrade]

1. The latest firmware image is available on our official website.
2. Make sure all other client connections are disconnected and current jobs such as recording are required to terminate.
3. During the upgrading period, ***DO NOT*** disconnect the power of the camera. Otherwise the system unit might be damaged.
4. The front LED indicator will be slow flashing in red during the upgrading process. When it becomes steady green, the upgrading process is completed.

[Steps of Firmware Upgrade]

1. Go to firmware upgrade page on the web. ***Figure 1***
2. Click "Firmware" button to load the firmware image. ***Figure 1***
3. Click "Upgrade" to begin (the upgrade progress bar will pop up). ***Figure 2***
4. Once it is done, the system will reboot automatically.
5. Go back to firmware upgrade page and confirm if the "current version" is up-to-dated. ***Figure 3***

Figure 1

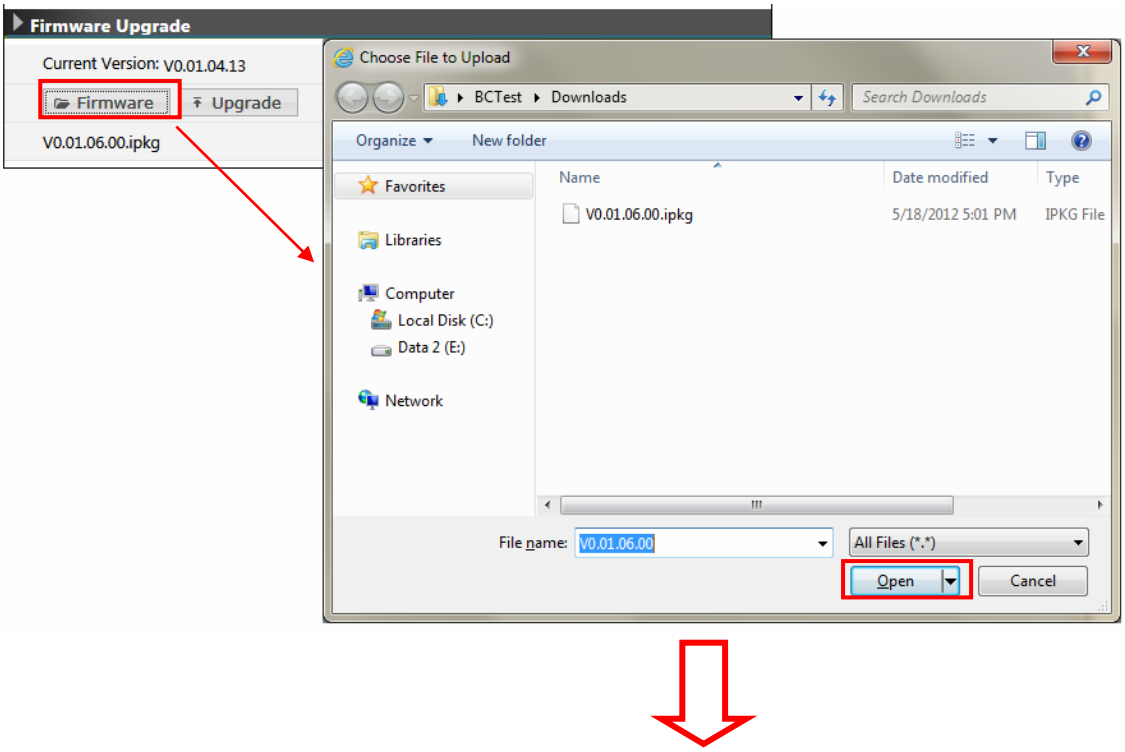


Figure 2

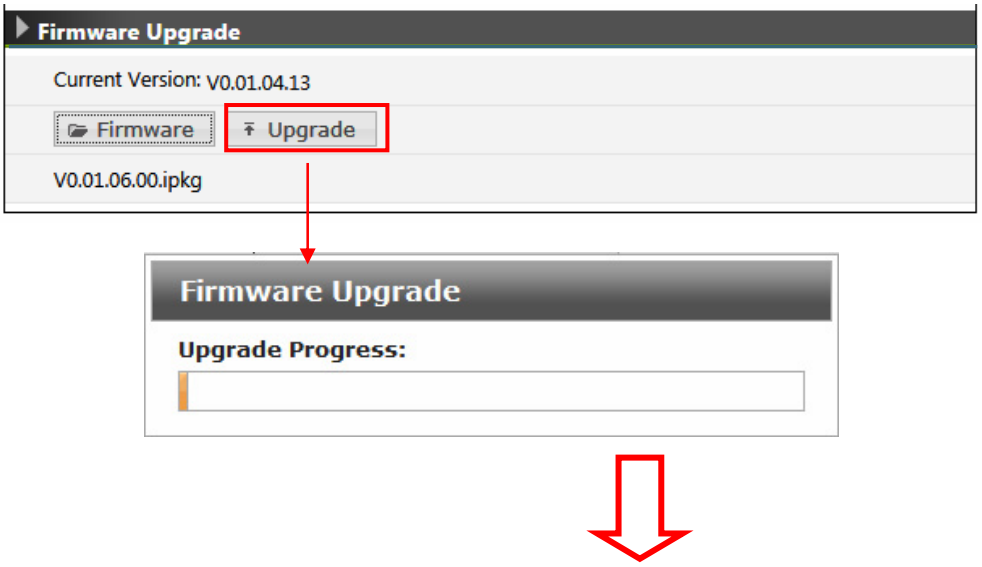
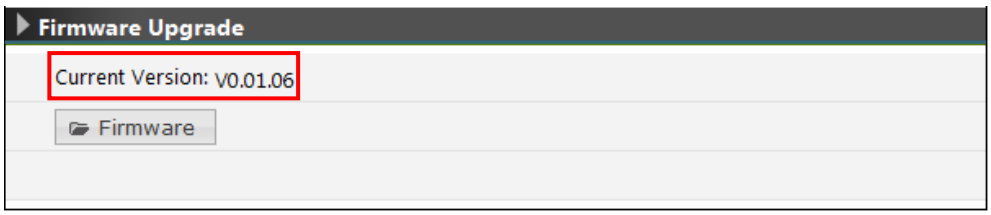
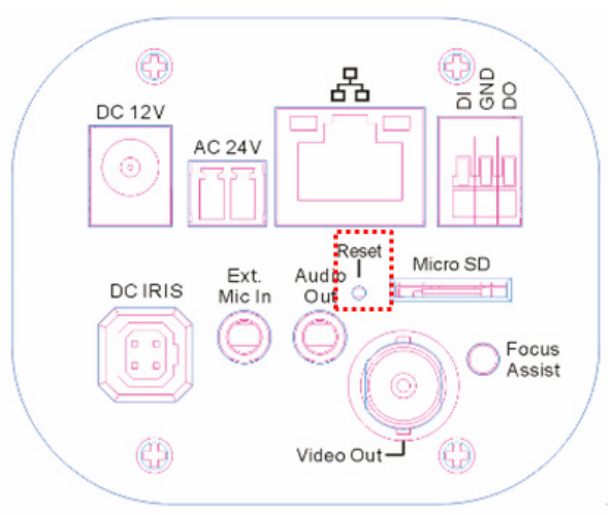


Figure 3



Recover device settings

In some cases, camera system does not respond to any operation. A certain recovering processes would help to get the unit back to initial status, so that it can resume operable / configurable. This will be the operations on the “Reset Button”.



Before executing hardware reset, please make sure the system booting process is completed by checking the LED (steady green) on the front panel.

1. **Restart / Reboot the device**

   Press and release the **Reset Button** within 5 second, the system will be restarted (the **LED Indicator** will be **steady amber** during rebooting process). Upon successful reboot, the LED will be **steady green** during normal operation.

2. **Reset account/password to factory default**

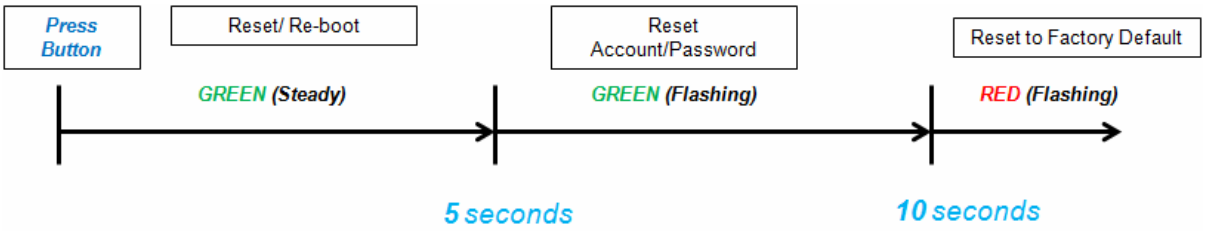
   Press and hold the **Reset Button** over 5 seconds, the LED will change from steady green to flashing green. During LED flashing as green, then release reset button, ONLY account/password will be reset as factory default, which is **admin/1234**. Please notice that, all configured accounts/passwords will be cleared and only the default one will been reserved.

3. **Reset to factory default settings**

   Press and hold the **Reset button** over 10 seconds, the LED will change as flashing red. During LED flashing as green, then release the reset button, ALL settings will be reset as factory default.

   The system will enter the restoring process automatically and complete it in 30 seconds after reset button released.

   The following illustrates the LED behavior during the restoring process for reference.



Technical Specifications

Video	
Sensor Type	1/4" 1M progress scan CMOS sensor
Active Pixels	1280 x 800 (HxV)
Compression	H.264 / MPEG4 / Motion JPEG
Streaming	Dual simultaneous streams
Resolution	(WXGA)1280x 800, 1280x 720, 800x450, 640x360, 320x180
Max. Frame Rate	Megapixel (1280x 800) at 30 fps (NTSC/PAL)
Day/Night	Mechanical (ICR) D/N Control
Day/Night Mode	Auto/ Day/ Night
Shutter Time	Range from 1/960s to 1/30s selectable (60Hz); Range from 1/1000s to 1/25s selectable (50Hz)
Minimum Illumination	Color (Shutter Speed: 1/30 sec): 0.4 Lux @10IRE; 0.8 Lux @50IRE B/W (Shutter speed: 30 sec): 0.16 Lux @10IRE; 0.32 Lux @50IRE
Video Output	NTSC: 720 X 480 @30fps; PAL: 720 X 576 @25fps
Bit Rate Control	Simultaneous stream bit rate control: CBR/VBR
Lens	
Type, Focal Length, F-number	Fixed Lens, f=4mm, F1.5 (Mega pixel lens)
View Angle	H: 53.1°/ V: 33.7°
IRIS Control	Yes
Lens Mount	CS Mount
Audio	
Audio Communication	Two-Way Mono Audio, Full-Duplex
Compression	G.711 μ-Law , PCM, 8kHz
Audio In/Out	Built -in microphone, External microphone and speaker
Image Enhancement	
Image Settings	AWB, AES, AGC; IRIS Mode: Off/ Auto; Flickerless Mode: On/ Off; Exposure & Gain Mode: Auto/ Manual; White Balance: Auto/ Fixed; Sharpness, Saturation, Brightness, Contrast: 17 level sensitivity; Exposure Level: 15 level sensitivity;
Digital WDR	Yes; 8 level sensitivity
Privacy Zone	Yes; customized threshold privacy zone (up to 8)
Image Orientation	Mirror, Flip
Frequency Control	50Hz, 60Hz
Date & Time Stamp	Yes
Test Overlay	Yes
Intelligent Video & Event Management	
Motion Detection	Up to 3 customized threshold detection windows, 101 detected object size or level sensitivity

Ethernet Detection	Network Fail detection
Others	Snapshot, digital Zoom, Optimized i-frame setting
Events	Motion detection, External alarm, Manual Trigger, Network Fail, Periodically Trigger.
Event Actions	File upload via FTP, SMTP, SAMBA and SD Card; Notification via FTP, email and External output activation; Video and audio recording to SD Card or SAMBA
Store Category	Alarm / Motion / Schedule/ Un-interrupt recording Stores video clips and snapshots
Local Storage	
Memory Card Slot	Micro SD / Micro SDHC Card up to 32 GB
Memory Card Overwrite	Yes
Network	
Protocol	IPv4, IPv6, HTTP, HTTPS, SMTP, FTP, DHCP, NTP, TCP/IP, UPnP, RTSP/RTP/RTCP, DNS, DDNS, PPPoE, IGMP, QoS, Bonjour, Samba, Multicast.
Ethernet	10Base-T/100Base-TX Ethernet connection for LAN / WAN, RJ-45
PoE	IEEE 802.3af
ONVIF	Yes
Browser	IE Browser 8.0 or 9.0
Security	Three-level access with password protection
I/O & Controls	
Power	DC 12V: DC Jack (2.0mm) AC 24V: Screwless Terminal block
Power LED Indicator	Yes
Alarm In/Out	Terminal Block 1 in / 1 out
Network	RJ-45 with LEDs (Network indicator)
Audio In/Out	3.5mm Phone Jack 1 in / 1 out for external microphone/speaker; Built-in Microphone
Analog Video	BNC X1, 1.0Vp-p, 75Ω
Reset	Within 1 sec for rebooting system; more than 10 sec until red LED starts to flash for loading default
Bicolor LED	Focus & Power & System Status
Focus Assist Button	YES (fine tune focus according to LED indicator)
Power	
Power Requirement	DC 12V & AC 24V ± 10% / PoE(IEEE 802.3af)
Power Consumption (Max.)	8W
Mechanism	
Dimensions(WxDxH)	66 x 65.5 x 55 mm (2.60" x 2.58" x 2.17")
Weight	270g (0.60 lb) w/o lens
Battery Backed-up Real-time Clock	Yes; Internal RTC
Environment	
Operating Temperature	0ºC ~ 50ºC (32ºF ~ 122ºF)
Operating Humidity	20~ 90% RH
Storage Temperature	-10°C ~ 55°C (14°F ~ 131°F)
Regulatory	
Approvals	CE, FCC, RoHS
Others	
Accessories	Wall mount with free pack-in camera stand, Power Adapter